

Training system Pneumatics

Equipment and teachware

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General catalog



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System presentation

1 System presentation

The training system on pneumatics consists of the hardware and the teachware that are adjusted to each other and constitute the material feature of the training system.

The hardware is divided into:

- work stations with necessary accessories.
- device sets on different learning topics.
- pneumatic components with the rapid mounting system.
They comprise both, the detailed information from the device sets and special pneumatic components for the exact consideration of single learning topics.
- Electrical components with the rapid mounting system that are suitable for the electrical attachment and for the installation on the grooved plate.
- Pneumatic accessories according to the requirements for the training and further education.

The teachware is designed for the easy procurement of the teaching and learning contents. In this connection, media for the self-study are available, as well.

The teachware is divided into:

- Exercise manuals for trainers and trainees with close reference to the hardware. Short introduction and preparation times for trainers lead to practice-oriented and safe exercises.
- Textbooks for the extensive in-depth study of learning topics, their backgrounds and typical application examples.
- Software as self-study media with understanding tests and media that illustrate the learning topics and can be incorporated into the training. Those media also comprise electronic documents on whole training blocks.
- Slide sets and working materials for designing an effective training with short preparation times.

Abbreviations and terms

Delivery units

If no other quantities are specified, 1 piece is considered to be the delivery unit.

Nominal flow

This is the flow at 6 bar with a pressure drop (Δp) of 1 bar.

Piston forces

The piston forces are specified for a nominal pressure of 6 bar.

Symbols

The electrical symbols comply with DIN EN 60617-2.

The pneumatic symbols comply with DIN-ISO 1219.

"For exercises according to"

The committees and/or companies recommend exercises on the specialized qualification. As reference, the abbreviations BiBB, PAL, BR are used in the catalog.

These committees need the described product in the prepared exercises or it is necessary for completing the exercises.

BiBB

The Federal Institute for Vocational Education and Training in Berlin (BiBB) publishes national recommendations for vocational schools and companies training apprentices. It is a nationally and internationally accepted competence center for investigating and advancing professional training and further education.

PAL

PAL (Examination questions and teaching material development agency) develops examination questions for the chamber of industry and commerce in the Federal Republic of Germany and compiles training material. Thus, uniform examinations in front of the chambers of industry and commerce can be guaranteed. These standardized working materials are specified in the PAL series of the chamber of industry and commerce in Stuttgart (volume 19). They are continuously updated in order to satisfy the changing industrial requirements.

BR

For continuative tasks and practice-related topics, the Didactic department of Bosch Rexroth AG has worked out own exercises as they are purposeful for establishing and testing the technical competence. In order to practically comprehend their content, more components are necessary in addition to the device sets according to BiBB or PAL.

Dimensions

The specified outside dimensions for the product in length x width x height (LxWxH) or in length x diameter (LxD).

Weight

The specified product mass does not include the packaging.

Test sockets

In general, different descriptions are used like e.g.: laboratory socket, connection socket, 4 mm socket. In the catalog, we use the term test sockets.

Measuring cables

In general, different descriptions are used like e.g.: laboratory cable, measuring cable, 4 mm cable. In the catalog, we use the term measuring cables.

Types of protection

The specified protection types are divided according to DIN 40 050, IEC 529, VDE 0470 and DIN EN 60529. In the catalog, the designation IEC 60529 is used as standard reference.

Snap in

Variable rapid mounting system for mounting the components at grooved plates with 8 mm groove width or groove profiles. The components can be mounted turned by 90 degrees. Space-saving assembly is on the one hand possible due to the 25 mm grid and on the other hand due to the continuous relocatability along the groove.

By pressing the components on, in the direction of the grooved plate, you automatically create a clamp connection with the grooved plate. The clamp connection is released by pushing the loosening handle (button or rod) parallel to the grooved plate with simultaneous removal of the component.

Tandem snap in

Variable rapid mounting system in which the snap in elements are series connected, i.e. in the same direction to the direction of the force as it is necessary for loosening the clamping device.

Plug-in connection

The term stands for rapid precision connectors for plastic tubes calibrated on the outside. The tubes are secured against extraction and sealed towards the component. Thus, you can also connect end plugs and suitable pipe sockets.

BRP catalog

Description of the current catalog on the industry products of the Pneumatic business division within Bosch Rexroth AG. Here, there is more information that could not be displayed in this general catalog. A lot of information can also be directly called via the Internet. Single catalog pages can be downloaded.

RB catalog

Description of the catalog on the industry products of the business division of Robert Bosch GmbH. Here, more products are described in more detail that have not been transferred into the new program of Bosch Rexroth AG. The catalog is not available any more, the products used are, however, still available. The RB catalog does not contain additional information on products that have been transferred into the new program.

System presentation

2 Work stations

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	• Rag and cable holder	

Work stations

2.1 Presentation of the typical work stations

In order to select the suitable equipment for the individual tasks at the educational institutions, Rexroth offers a broad product range.

A double work station, installed on a moveable device carrier (DS3):

Equipped with many functions that are necessary in the training; large work surface, separated electro line, integrated power supply units, space-saving parking space for unnecessary components, with auxiliary container prepared for accepting device sets sorted according to topics.



Fig. Double work station, installed on a moveable device carrier (DS3)

2.1 Presentation of the typical work stations

A double work station, installed from a free-standing work plate on a table (EcoDesk), contains a large work surface and optionally an electrical attachment.

Thus, existing tables can be temporarily used for the pneumatic training.



Fig. Double work station, installed on a table (EcoDesk)

Work stations

2.1 Presentation of the typical work stations

A work station, installed from an opened case, put on the table. The work surface is sufficient for simpler exercises on pneumatics and electropneumatics.

Folded, it accepts the didactic components and can be cleanly stored.

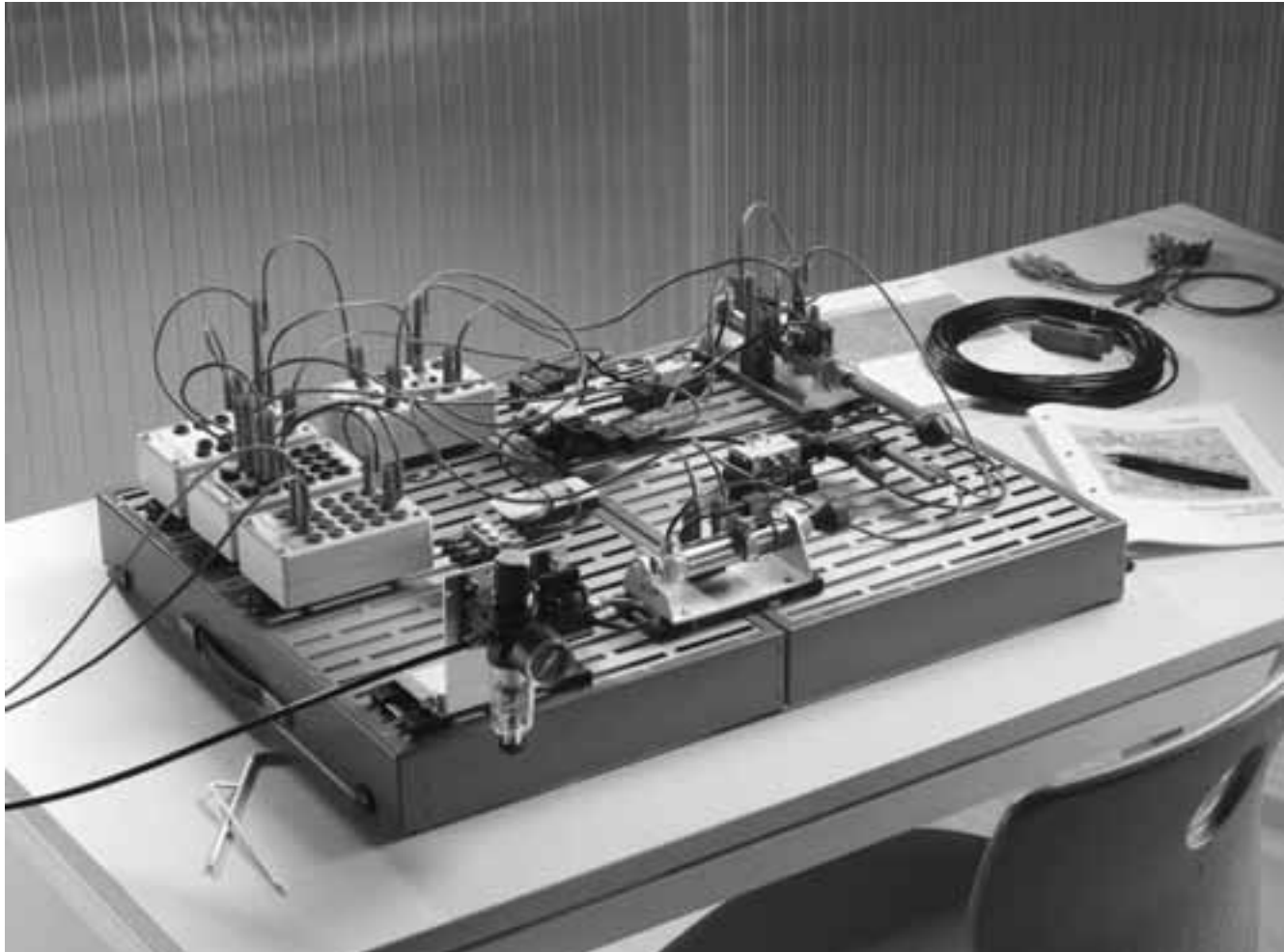


Fig. Work station, installed from a folding-type case

2.1 Device carrier

By adding containers and attaching and installing optimum devices, the light, mobile device carriers become individual work stations. The advantage is that DS3 work stations and components can be used in a multifunctional way.

Install it yourself - save money!

The DS3 work station system is supplied as construction kit in four handy, prefabricated assemblies. The installation can be easily and quickly completed using the supplied tools. As extension, there are numerous attachments and installations.

DS3synergy LT

Material no. **1827003700**

Technical description

Mobile work station for exercise installations in rapid assembly, horizontally, components can be continuously displaced, vertically in steps, usable on both sides, with storage area for the components that are not necessary in the exercise, prepared for optional attachments.

Moveable base structure of aluminum profiles, with 4 lockable rollers, double-sided grooved plate with 25 mm grid width, perforated plate with 25 mm bore grid, storage trays on both sides.

DS3 SYNERGY-LT

Data:

Dimensions (LxWxH)	mm	1250x800x1610
Weight	kg	65
Mounting type	free-standing, moveable	
Work stations	opt. / max.	2 / 4
Material	Aluminum	anodized
	Steel plate	coated
2 work surfaces (LxW)	mm	1130 x 700
Form of delivery	unmounted	as kit
Recommended accessories	Pcs	Mat. no.
Electrical attachment	1	1827003703
Screen support arm	2	1827003725
Work info board	2	1827003721
Cable and rag holder	2	1827003722
Writing surface	2	1827003705
Power supply DS3, DE	2	R961000170
Electro inst. set, DE	2	R961000171
Roller container	2	R961000287
Perforated plates for container	2	R961001666



Work stations

2.2 Device carrier

ECODESK: Table version groove plateMaterial no. **R961003826****Technical description**

Work station standing on a table, for exercise installations in rapid assembly, horizontally, components can be continuously displaced, vertically in steps, usable on both sides.

Base structure of aluminum profiles, with double-sided grooved plate with 25 mm grid width, with assembly bracket for fastening on the table.

TS-ECODESK

Data:

Dimensions (LxWxH)	mm	1150x640x730
Weight	kg	22,3
Mounting type	free-standing	
possible work stations	opt. / max.	2 / 4
Material	Aluminum	anodized
2 work surfaces (LxW)	mm	1130x700
Form of delivery	as kit	
Recommended accessories	Pcs	Mat. no.
Electrical attachment	1	1827003703
Power supply unit	1	R961001099
Roller container	1	R961000287
Perforated plates for container	1	R961001666

**CS2 - grooved plate case; empty**Material no. **1827003552****Technical description**

Work station lying on a table, as case system for working and storing, for rapid assembly.

Components continuously moveable in one direction, in the other direction in steps of 25 mm.

CS2 - NUTENBLECHKOFFER, LEER

Data:

Dimensions (LxWxH)	mm	550x370x145
Weight	kg	4,5
Mounting type	lying on a table	
Work surface	mm	550x700



2.2 Device carrier

LT grooved panel

Material no. **1827003702**

Technical description

Installation surface for quick assembly for exercise installations. Apart from the installation in the basic support frame, it is also suitable for the installation of individual work stations in the grooved plate technology.

Grooved plate useable on both sides, serves the fastening of components for the training exercises by means of groove connections and disposes of the following advantages:

- flexible mounting without tools.
- component assembly that can be turned by $4 \times 90^\circ$.
- compact mounting with 25 mm groove distance, thus optimum space utilization.
- horizontally, the attachment can be adjusted continuously, vertically in the 25 mm grid.
- clearly arranged installation of the components, thus short length of the connecting tubes.



NUTENPLATTE LT

Data:

Dimensions (LxWxH)	mm	1130x700x30
Weight	kg	20,8
Mounting type	screwed	
possible work stations	opt ./ max.	2 / 4

Grooved panel for DS4 with fastening set

Material no. **R961000169**

NUTENPLATTE DS3-G UND DS4 MIT BEFEST

Dimensions (LxWxH)	mm	1130x700x30
Weight	kg	24
2 installation surfaces (LxW)	mm	1130x700

DS grooved panel; 800 x 750 mm

Material no. **R961000306**

NUTENPLATTE DS. NUT8- 750X 800

Dimensions (LxWxH)	mm	800x750x30
Weight	kg	17
2 installation surfaces (LxW)	mm	800x750

Profile plate 1130 x 700 x 30 mm

Material no. **R961000168**

NUTENPLATTE 1130 X 700 X 30 MM *BG

Dimensions (LxWxH)	mm	1130x700x30
Weight	kg	22
2 installation surfaces (LxW)	mm	1130x700

Profile plate 565 x 700 x 30 mm

Material no. **1827003299**

NUTENPLATTE 565 X 700 X 30 MM

Dimensions (LxWxH)	mm	565x700x30
Weight	kg	11,5
2 installation surfaces (LxW)	mm	565x700

Work stations

2.3 Attachments and installations for the device carrier

Set of rubber feet for slotted plate

Material no. **R961003221**

Technical description

Rubber buffer as foot for setting up the EcoDesk table carrier (grooved plate with transverse profiles). Balances any unevenness and spares the surface.
Rubber body with vulcanized thread bolt, with nut for attachment in the groove of the aluminum profile.

ANSCHLAGPUFFER 20X15 *BG		
Data:		
Dimensions (LxWxH)	mm	20x15
Weight	kg	0,068
Mounting type	with nut	
Material	Rubber	black
Degree of hardness	shore	55°
Delivery unit	Piece(s)	4




Spacer pins for grooved plate

Material no. **1827003554**

Technical description

Spacers for stacking grooved plate cases or grooved plates with installed exercises.
Rod of plastic, one side with nut and one side with pin suitable for 8 mm groove.

DISTANZBOLZEN FUER NUTENPLATTE		
Dimensions (LxD)	mm	140 x Ø 20
Weight	kg	0,314
Mounting type	screwed	



2.3 Attachments and installations for the device carrier

Electrical attachment S

Material no. **1827003703**

Technical description

Support for electronic modules, for setting up electrical circuits, connected with measuring cable, usable on both sides, suitable for the snap in rapid mounting system. Non-occupied areas can be used as support for documents.

As extension for both, the DS3 basic support frame and the EcoDesk. Profile frame of aluminum groove profiles, with 8 mm groove, within the profile frame, there is a view plate of steel plate coated in blue.

DS3 ELEKTROAUFSATZ

Data:

Dimensions (LxWxH)	mm	1130x170x30
Weight	kg	3,7
Mounting type	screwed	
possible work stations	opt. / max.	2 / 4
Material	Aluminum Steel plate	anodized coated
2 installation surfaces (LxW)	mm	1130x130



DS3 power pack 230 V~/4,5A

Material no. **R961000170**

Technical description

Power supply unit for supplying the control and measuring electronics, for operating the electrical components.

Can be installed in each side frame of the carrier in a space-saving way, also subsequently.

- Operating surface and housing of coated metal
- short-circuit-proof with switch and control lamp
- per pole 2 connection sockets for DC output
- Power supply unit according to EN60320-1 / DIN VDE 0625-1
- Plug to the power supply unit according to DIN49441-R2 / CEE7
- Creates safety-low voltage

NETZTEIL-DS3 230V~/4,5A

Data:

Dimensions (LxWxH)	mm	360x162x47
Weight	kg	2,252
Mounting type	plugged in	
AC input voltage	V	230
Frequency	Hz	50
DC output current max.	A	4,5
Type of protection	IEC 60529	IP 20
Recommended accessories	Pcs	Mat. no.
Connection cable D, 3m	1	1827003724



Work stations

2.3 Attachments and installations for the device carrier

DS3 power pack 115 V~/4,5AMaterial no. **1827003740****Technical description**

Power supply unit for supplying the control and measuring electronics, for operating the electrical components.
Can be installed in each side frame of the carrier in a space-saving way, also subsequently.

- Operating surface and housing of coated metal
- short-circuit-proof with switch and control lamp
- in each case 2 connection sockets for DC output
- Power supply unit according to EN60320-1 / DIN VDE 0625-1
- Plug to the power supply unit according to DIN49441-R2 / CEE7
- Creates safety-low voltage

NETZTEIL DS3 115V~/4,5A

Data:

Dimensions (LxWxH)	mm	360x162x47
Weight	kg	2,028
Mounting type	plugged in	
AC input voltage	V	115
Frequency	Hz	60
DC output current max.	A	4,5
Type of protection	IEC 60529	IP 20
Recommended accessories	Pcs	Mat. no.
Connection cable US, 2m	1	1827003742

**Connection cable D; 3 m**Material no. **1827003724****Technical description**

For the power connection for a power supply unit or a multiple socket.

Connection cable, three-wire, design according to EN60320-1 / DIN VDE 0625-1

VERBINDUNGSKABEL D, 3M

Data:

Dimensions (LxWxH)	mm	200x200x60
Weight	kg	0,9
Mounting type	plugged in	
Cable length	m	3
AC voltage	V	230
Temperature max.	°C	70
Type of protection	IEC 60529	IP 20



2.3 Attachments and installations for the device carrier

Connection cable D; 1 m

Material no. **1827003727**

Technical description

For the power connection for a power supply unit or a multiple socket.

Connection cable, three-wire, design according to EN60320-1 / DIN VDE 0625-1

VERBINDUNGSKABEL D, 1M

Data:

Dimensions (LxWxH)	mm	200x200x60
Weight	kg	0,7
Mounting type	plugged in	
Cable length	m	1
AC voltage	V	230
Temperature max.	°C	70
Type of protection	IEC 60529	IP 20



Connection cable US; l=1 m/36"

Material no. **1827003741**

Technical description

For the power connection for a power supply unit or a multiple socket.

Connection cable, three-wire, power supply unit in design according to US/ISO plug, suitable for the power supply unit with mat. no.: 1827 003 740.

VERBINDUNGSKABEL US, L=1M/36

Data:

Dimensions (LxWxH)	mm	200x200x60
Weight	kg	0,7
Mounting type	plugged in	
Cable length	m	1
AC voltage	V	115
Temperature max.	°C	70
Type of protection	IEC 60529	IP 20



Work stations

2.3 Attachments and installations for the device carrier

Connection cable US; l=2 m/72"Material no. **1827003742****Technical description**

For the power connection for a power supply unit or a multiple socket.

Connection cable, three-wire, power supply unit in design according to US/ISO plug, suitable for the power supply unit with mat. no.: 1827 003 742.

VERBINDUNGSKABEL US, L=2M/72

Data:

Dimensions (LxWxH)	mm	200x200x60
Weight	kg	0,8
Mounting type	plugged in	
Cable length	m	2
AC voltage	V	115
Temperature max.	°C	70
Type of protection	IEC 60529	IP 20

**Info board; DIN A4; jointed**Material no. **1827003721****Technical description**

For displaying information at the work station in an ergonomic way as it is necessary for completing the training exercise, e.g. circuit diagrams, device descriptions, work instructions. Thus, direct access at the work station is guaranteed.

2-times jointed support profile, with mounting kit for attachment at the side frame of the carrier via nuts in the aluminum groove profile or grooved plate, height-adjustable, cover with a moveable acrylic protective shield.

INFORMATIONSTAFEL DINA4,GELENKIG

Data:

Dimensions (LxWxH)	mm	370x280x80
Weight	kg	4,11
Mounting type	screwed with nuts	
Material	Aluminum	anodized
	Steel plate	coated
Board size	Format	DIN A4



2.3 Attachments and installations for the device carrier

Screen support arm

Material no. **1827003725**

Technical description

The jointed support arm with rotatable retaining surface promotes an ergonomic furnishing of the work station with monitor and keyboard.

The support arm consists of a 2-fold jointed support profile with retaining plate and a mounting plate for the height-adjustable attachment at the carrier's side frame.

The assemblies:

- Support arm of anodized aluminum profiles
- Retaining surface of steel plate, pivot-mounted
- Retaining bracket for keyboard, chrome-plated round steel
- Mounting kit

BILDSCHIRM-TRAGARM, KPL.

Data:

Dimensions (LxWxH)	mm	550x420x20
Weight	kg	8,3
Mounting type	screwed with sliding blocks	
Bearing capacity	N	250
Material	Aluminum	anodized
	Steel plate	coated
Table surface (LxW)	mm	400x400



Electro installation set D

Material no. **R961000171**

Technical description

As extension of the power connection at the DS3 carrier. For supplying the power supply unit and for external consumers.

The electro power connection kit is attached at the lower part of the carrier at the front side at the the aluminum profile in an easily accessible way.

The power connection kit consists of:

- 3x triple grounding outlet bar
- Power connection cable according to EN 60320-1 / DIN VDE 0625-1
- Cable to the power supply unit according to DIN49441-R2 / CEE7
- Mounting parts

ELEKTRO-INSTALLATIONSSET D

Data:

Dimensions (LxWxH)	mm	254x59x49
Weight	kg	0,91
Mounting type	screwed with nuts	
Cable length to the mains	m	3
Cable length to the power supply unit	m	0,5
AC voltage	V	230
Current	A	16
Type of protection	IEC 60529	IP 20
Recommended accessories	Pcs	Mat. no.
Cable and rag holder	1	1827003722



Work stations

2.3 Attachments and installations for the device carrier

Electro installation set CH

Material no. **R961000439**

Technical description

As extension of the power connection at the DS3 carrier. For supplying the power supply units and for external consumers. The electro power connection kit is attached at the lower part of the carrier at the front side at the the aluminum profile in an easily accessible way.

The power connection kit consists of:

- 2x triple grounding outlet bar with switch
- Power connection cable according to EN 60320-1 / DIN VDE 0625-1
- Cable to the power supply unit connection according to DIN 49441-R2 / CEE7
- Mounting parts

ELEKTRO-INSTALLATIONSSET DS-CH

Data:

Dimensions (LxWxH)	mm	254x59x49
Weight	kg	0,91
Mounting type	screwed with nuts	
Cable length to the mains	m	5
Cable length to the power supply unit	m	0,5
AC voltage	V	230
Current	A	10
Type of protection	IEC 60529	IP 20
Recommended accessories	Pcs	Mat. no.
Cable and rag holder	1	1827003722



Electro installation set US

Material no. **1827003743**

Technical description

As extension of the power connection at the DS3 carrier. For supplying the power supply units and for external consumers. The electro power connection kit is attached at the lower part of the carrier at the front side, at the the aluminum profile in an easily accessible way.

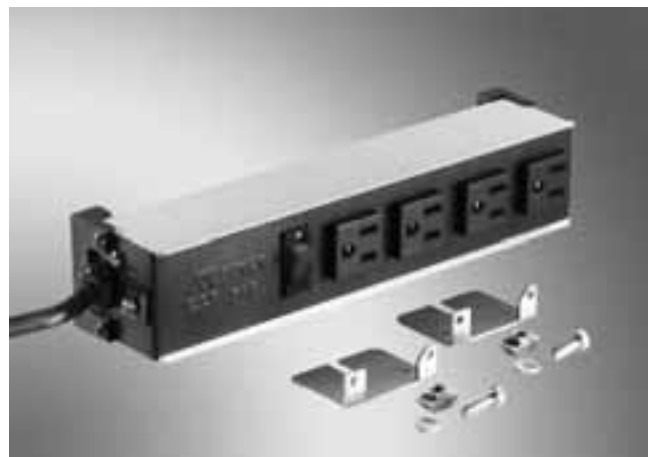
The power connection kit consists of:

- Fourfold socket with switch,
- Cable for power connection US/ISO plug
- Cable to the power supply unit according to DIN49441-R2 / CEE7
- Mounting kit

ELEKTRO-INSTALLATIONSSET US

Data:

Dimensions (LxWxH)	mm	300x90x70
Weight	kg	0,8
Mounting type	screwed with nuts	
Cable length to the mains	m	1,8
Cable length to the power supply unit	m	0,5
AC voltage	V	115
Current	A	10
Type of protection	IEC 60529	IP 20
Recommended accessories	Pcs	Mat. no.
Cable and rag holder	1	1827003722



2.3 Attachments and installations for the device carrier

Writing surface set; LE2

Material no. **1827003705**

Technical description

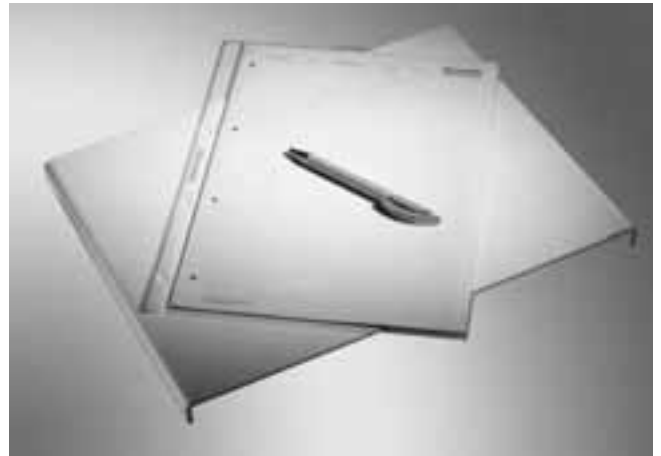
For preparing notes regarding exercise instructions and procedures at the work station. Due to the relocatability, an ergonomic working position is always possible.

The edges of the plates are bent on both sides for the insertion into the trays of the carrier.

SCHREIBAUFLAGE, LE2

Data:

Dimensions (LxWxH)	mm	360x280x20
Weight	kg	0,53
Mounting type	loosely inserted, can be displaced	
Material, plastic	PMMA	white
Delivery unit	Piece(s)	2



Cable holder for 50 measuring cables

Material no. **R961004144**

Technical description

Cable holder for accepting measuring cables, ergonomic work station with availability of the necessary measuring cables for the training exercises to be completed. The measuring cable is hooked into the cable holder. The cable holder itself is, at the selected position, attached at the side frame of the carrier or in the groove of the grooved plate.

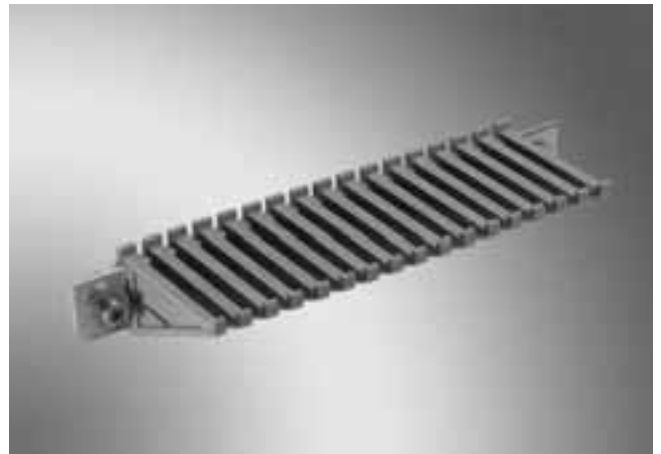
Included in the delivery:

- Anodized aluminum sheet
- 17 plastic holders for accepting the measuring cables
- Mounting kit (screws with nut)

KABELHALTER DS.1X/ 50-FACH MIT BEF.-SATZ


Data:

Dimensions (LxWxH)	mm	210x65x35
Weight	kg	0,14
Mounting type	screwed	
Acceptance capacity	Piece(s)	50
Material	Aluminum	anodized
	Plastic	PVC



Work stations

2.3 Attachments and installations for the device carrier

Rag holder set; LE2			Material no.	1827003722
Technical description				
Useable as handy arrangement of cleaning tissues and as cable and hose routing. Increases clarity at the work station. Consists of plastic, is clamped into the carrier's aluminum groove profiles in an easily fixable and removable way.				
LAPPENHALTER, VE=2				
Data:				
Dimensions (LxWxH)	mm	80x75x40		
Weight	kg	0,046		
Mounting type	clamped in groove			
Material	Plastic	black		
For groove width	mm	10		
Delivery unit	Piece(s)	2		

2.4 Extensions for the work station

Roller container for pneumatics

Material no. **R961000287**

Technical description

Roller container to the carrier, for accepting tools, measuring tools, components and incidentals. It is one prerequisite for the fast, ordered availability of parts at the work station.

Design details:

- drawers with easy running tracks
- central cylinder lock, each drawer is separately arrested
- housing and drawers of coated sheet steel
- 2 lockable guide rollers, 2 fixed rollers for heavy loads
- surface with frame and rubber pad
- front side with slide rod

ROLLCONTAINER PN

Data:

Dimensions (LxWxH)	mm	810x730x420
Weight	kg	78
Mounting type	mobile, lockable rollers	
Load per drawer	N	500
Number of drawers	Pieces /	4 / 100 mm
	height	1 / 150 mm
Material	Steel plate	coated
Recommended accessories	Pcs	Mat. no.
Compartment division, H=100 mm	1	R961000563
Compartment division, H=150 mm	1	R961000564
Slip-resistant mat	1	R961000568
Perforated plates for container	1	R961001666



Assortment of drawer dividers DS 100 (18x36E) (80.635)

Material no. **R961000563**

Technical description

Division of the area in the container drawer in order to assort the stored parts. Parts storage directly at the work station, avoidance of any moving of the parts when opening and closing the drawer.

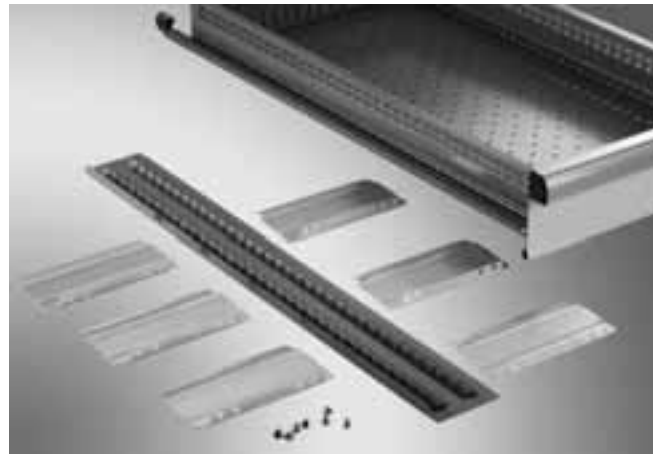
Version;

- Division profiles of galvanized steel plate
- Fine division by means of staged grid slots in the middle rail
- 6 transverse division components to be hooked into the middle rail

SCHUBLADENEINTEILUNGSSORTIMENT DS 100

Data:

Dimensions (LxWxH)	mm	620x100x40
Weight	kg	0,888
Mounting type	plugged / optionally screwed	
Applications	Piece(s)	8



Work stations

2.4 Extensions for the work station

**Assortment of drawer dividers
DS 150 (18x36E) (80.636)**Material no. **R961000564****Technical description**

Division of the area in the container drawer in order to assort the stored parts. Parts storage directly at the work station, avoidance of any moving of the parts when opening and closing the drawer.

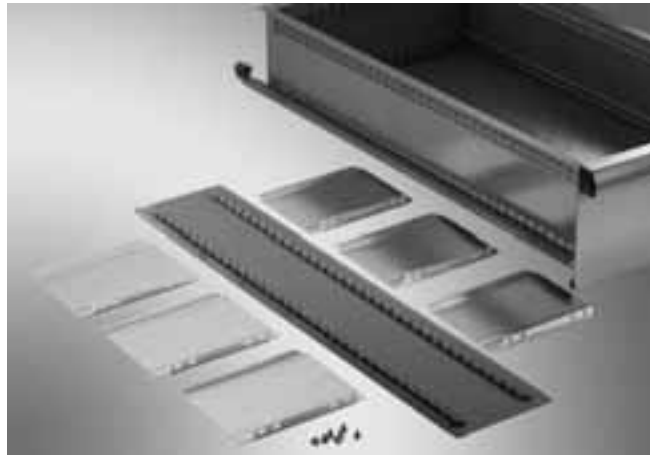
Version;

- Division profiles of galvanized steel plate
- Fine division by means of staged grid slots in the middle rail
- 6 transverse division components to be hooked into the middle rail

SCHUBLADENEINTEILUNGSSORTIMENT DS 150

Data:

Dimensions (LxWxH)	mm	620x100x40
Weight	kg	1,28
Mounting type	plugged / optionally screwed	
Applications	Piece(s)	8

**Slip-resistant mat (18x36U) (119.000)**Material no. **R961000568****Technical description**

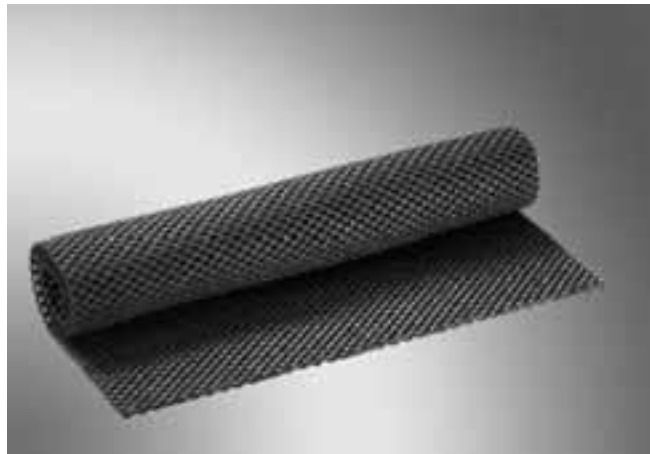
Avoidance of any slipping of the parts stored in the container drawer like tools and components, damping upon putting down, sparing handling of tools and components.

Produced of black soft rubber, cut for drawers in the roller container with mat. no.: R961000287 and built-in container with mat. no.: R961000288. Can also be used with the range of drawer dividers 100 mm and/or 150 mm.

ANTI-RUTSCH-MATTE 18X36E

Data:

Dimensions (LxWxH)	mm	600x300x3
Weight	kg	0,086
Mounting type	loosely applied	
Material	Neoprene	black



2.4 Extensions for the work station

Set of perforated plates for containers

Material no. **R961001666**

Technical description

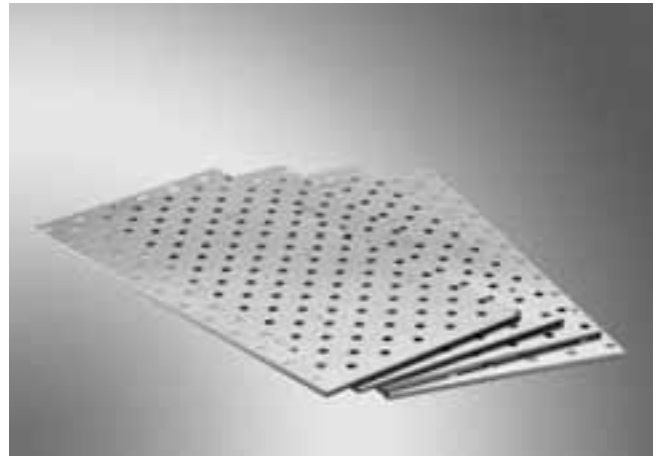
4 perforated plates with bores in the grid consistent with the snap in system, with symbol print for BiBB pneumatic set and BiBB electropneumatic set, useful for order at the work station and availability of components and tools at an ergonomically reasonable position.

Stainless steel plate, 4 edges bent, outside dimensions suitable for the container drawers.

LOCHBLECH 1,5X 297X 600 BIBB

Data:

Dimensions (LxWxH)	mm	600x330x30
Weight	kg	2,75
Mounting type	loosely inserted	
Material	Stainless steel	V2A
Bore grid snap in	mm	25



Work stations

3 Device sets on learning topics

3.1	Presentation Device sets	28
3.2	Learning topics according to BiBB	29
	• Basic set pneumatics according to BiBB	
	• Extension set electropneumatics according to BiBB	
	• Cable set electropneumatics according to BiBB	
3.3	Learning topics according to PAL.....	35
	• Basic set pneumatics according to PAL	
	• Extension set electropneumatics according to PAL	

Device sets on learning topics

3.1 Presentation Device sets

In order to simplify the compilation of the many components for the single learning topics for the trainer, device sets are compiled.

They simplify order and processing, offer completeness on each topic and are compatible with the teachware.

The device sets are suitable for completing the exercises on pneumatics and electropneumatics.

3.2 Learning topics according to BiBB

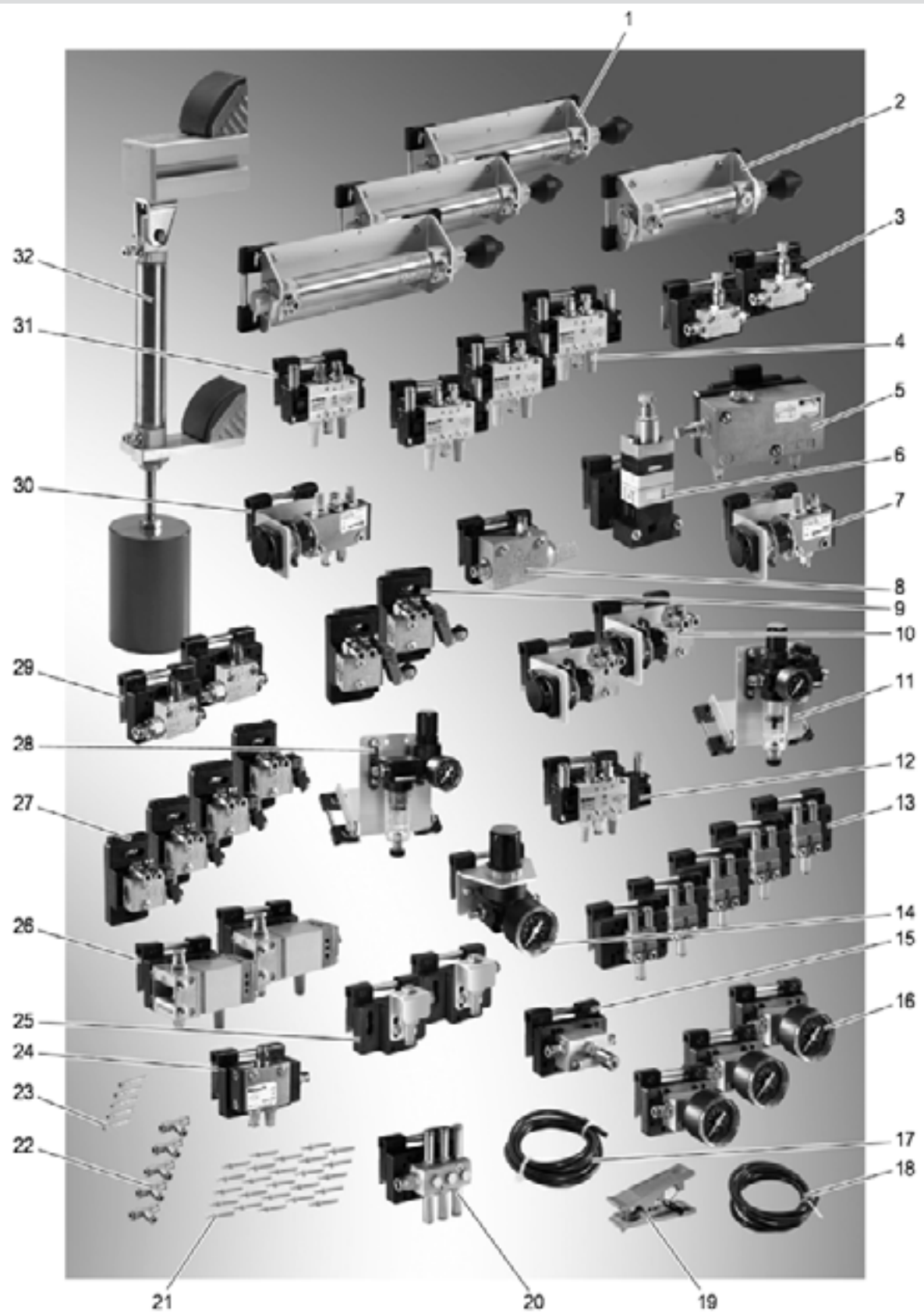
Basic PN kit BiBB, SI		Material no.	1827003365
Technical description:			
The pneumatic device set for BiBB exercises is suitable for converting the learning targets and learning contents in the technical-industrial training and further education in the sense of the BIBB into the pneumatic fundamentals on the basis of real industry products.			
Components:			
Single-acting cylinders, double-acting cylinders, 3/2-, 4/2-, 5/2- and 5/3-way directional valves, throttle valves, check valves, throttle check valves, exhaust throttling, rapid exhaust valves, pneumatic amplifier, reflection nozzle, pneumatic logic valves, retarding valves			
BIBB-GS PNEUMATICS SI			
Data:			
Dimensions (LxWxH)	mm	450x330x320	
Weight	kg	19	
Mounting type		Snap in	
For exercises according to		BiBB	
Operating pressure	bar	6	
Recommended accessories:	Pcs	Mat. no.	
Work table with grooved panel, Eco-Desk	1	R961003826	
Carrier with grooved panel, DS3	1	1827003700	
Compressor 230V with accessories	1	1827008426	
Compressor 110V with accessories	1	R961003964	
Recommended teachware:		Mat. no.	
Textbooks and teaching material:			
Exercise series "Practice for Prof., Pneumatics" Trainer's manual en		R900783082	
Exercise series "Practice for Prof., Pneumatics" Trainee's manual en		R901005738	
Overhead slides, pneumatic - de/en		R900084596	
Symbol stencil Fluidik HY/PN		R900018486	
Pneumatic slide rule - de		R961000803	
"Pneumatics" training charts - de/en		R961000802	
Sticker symbol case		1827003030	
The Pneumatic Trainer, Volume 1 - en		R900018136	
Book "Pneumatics. Theory & Application" - en		R927001146	
Self-study media:			
Basic Pneumatics WebTr@iner single license - de/en/es		1070083007	
Media from Basic Pneumatics WebTr@iner - de/en/es		R961001731	
PNgraphics, Slides to the book "Pneumatics. Theory and Applications"		R900701018	

Device sets on learning topics

3.2 Learning topics according to BiBB

Basic PN kit BiBB, SI				Material no.	1827003365
Item	Quantity	Material no.	Designation		
1	3	1827003372	Double action cylinder; d=25; s=100 mm; SI		
2	1	1827003371	Single action cylinder d=25; s=50 mm; SI		
3	2	1827003379	Throttle check valve G1/8; d=1 mm; SI		
4	3	1827003377	5/2-way control valve G1/8; PN pulse; SI		
5	1	1827003385	3/2-way timer valve G1/8; SI		
6	1	1827003388	3/2-way adjustable control valve M5; 2 to 8 bar; SI		
7	1	1827003393	3/2-way control valve G1/8 button; SI		
8	1	1827003381	Rapid exhaust valve G1/4, SI		
9	2	1827003401	3/2-way control valve M5 roller lever with idle return; SI		
10	2	1827003392	3/2-way control valve M5 button; SI		
11	1	1827003410	Filter regulator 3/2-way valve; 0.2-8 bar; SI		
12	1	1827003378	5/3-way control valve G1/8; mid. pos. closed PN; SI		
13	5	1827003383	AND G1/8 1-fold, SI		
14	1	1827003386	Pressure regulator G1/8; 0.5-10 bar; SI		
15	1	1827003409	PN pressure display, SI		
16	3	1827003406	Manometer 0-10 bar, SI		
17	1	1820712012	Plastic tubing 6x1 PU; LE 25 m		
18	1	1820712010	Plastic tubing 4x1 PU; LE 25 m; black		
19	1	1823391390	Pipe cutter		
20	1	1827003411	PN distributor 6-fold, SI		
21	25	2123204000	End plug		
22	5	1823381043	T-connection d=4 mm; LE = 1 unit		
23	5	1823391629	Double plug; d=4 mm; LE = 1 unit		
24	1	1827003374	3/2-way control valve G1/8; PN spring return; SI		
25	2	1827003403	Reflex nozzle d=3 mm; SI		
26	2	1827003389	3/2-way control valve G1/8 amplifier two-stage; SI		
27	4	1827003399	3/2-way control valve M5 roller lever; SI		
28	1	1827003387	Filter regulator G1/8; 0.1-1 bar; SI		
29	2	1827003382	OR G1/8 1-fold; SI		
30	1	1827003396	5/2-way control valve G1/8 button; SI		
31	1	1827003376	5/2-way control valve G1/8; PN spring return; SI		
32	1	R961003214	Load simulator		

3.2 Learning topics according to BiBB

Basic PN kit BiBB, SIMaterial no **1827003365**

Device sets on learning topics

3.2 Learning topics according to BiBB

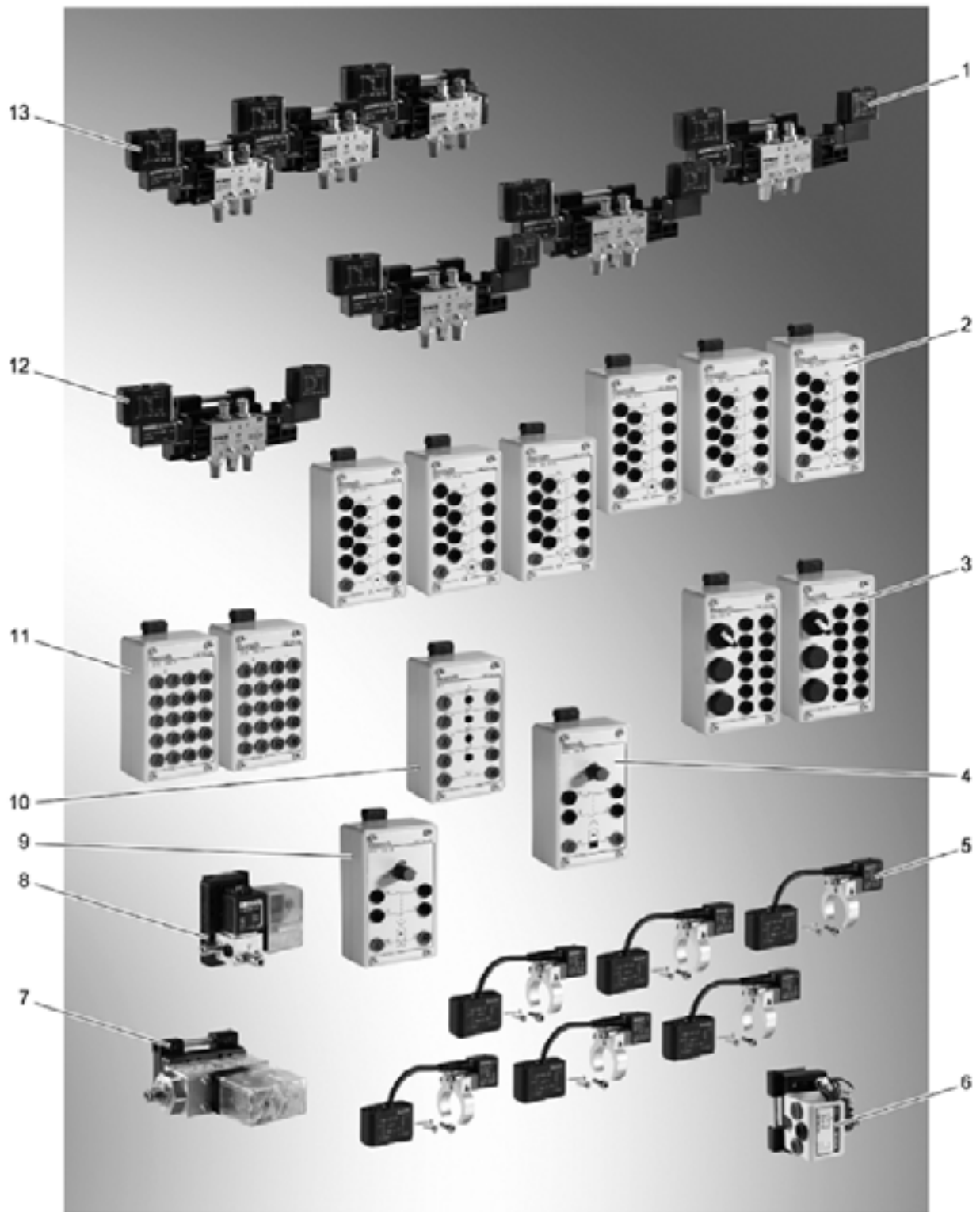
Electrical extension kit for BiBB, BOX, TSI		Material no.	1827003578
Technical description:			
Electropneumatics, extension device set, building on the pneumatic device set on BiBB exercises, mat. no.: 1827003365			
Components:			
Operating modules in plastic boxes, 3/2-, 5/2-, 5/3-way control valves with electrical operation, cylinder switches, pressure switches and limit sensors.			
BIBB ELECTRICAL EXTENSION; BOX, TSI			
Data:			
Dimensions (LxWxH)	mm	450x330x320	
Weight	kg	9	
Mounting type		Snap in	
For exercises according to		BiBB	
Operating pressure	bar	6	
Operating voltage	(DC) V	24	
Recommended accessories:	Pcs	Mat. no.	
230 V power supply unit for installation in DS3	1	R961000170	
Power connection cable, to power supply unit power supply unit with distributor in plastic box	1	1827003724	
Electrical attachment for carrier	1	R961001099	
BiBB cable set for electropneumatics	1	1827003703	
	1	1827003436	
Recommended teachware:		Mat. no.	
Textbooks and teaching material:			
Exercise series "Practice for Prof., Electropneumatics" Trainer's manual en		R900783083	
Exercise series "Practice for Prof., Electropneumatics" Trainee's manual en		R927001115	
Overhead slides, Electropneumatics - de/en		R900087135	
Symbol stencil Fluidik HY/PN		R900018486	
Pneumatic slide rule - de		R961000803	
"Pneumatics" training charts - de/en		R961000802	
Sticker symbol case		1827003030	
The Pneumatic Trainer, Volume 2 - en		R900018146	
Book "Pneumatics. Theory & Application" - en		R927001146	
Self-study media:			
Pneumatic systems WebTr@iner single license - de/en/es		R961001656	
Media from Pneumatic systems WebTr@iner - de/en/es		R961001732	
PNgraphics, Slides to the book "Pneumatics. Theory and Applications"		R900701018	

Item	Quantity	Material no.	Designation
1	3	1827003414	5/2-way pulse solenoid valve G1/8; SI
2	6	1827003583	Relay box 24V; 4A; 4 change-over controls; TSI
3	2	1827003588	1 switch/2 buttons box 24V; 4A; TSI
4	1	1827003585	Relay box 24V; 4A; release time delay; TSI
5	6	1827003437	Electric cylinder switch with adapter; BS
6	1	1827003421	Electrical limit sensor with roller lever; 1 change-over control; 2 A
7	1	1827003428	Mechanical pressure switch 1 - 16 bar, SI
8	1	1827003412	3/2-way solenoid control valve M5 spring return; SI
9	1	1827003584	Relay box, 24V; 4A; pick-up delay; TSI
10	1	1827003586	Display box 24V; optical/acoustic; TSI
11	2	1827003587	Distributor box 24V; 4A; 10+/10- sockets; TSI
12	1	1827003415	5/3-way solenoid valve G1/8 mid. pos. closed; SI
13	3	1827003413	5/2-way solenoid valve G1/8 with spring return; SI

3.2 Learning topics according to BiBB

Electrical extension kit for BiBB, BOX, TSI

Material no. **1827003578**



Device sets on learning topics

3.2 Learning topics according to BiBB

Cable set BIBB electropneumatics	Material no. 1827003436
----------------------------------	--------------------------------

Technical description:
Cable set for electropneumatics, for the installation of the BiBB exercises on electropneumatics
Flexible laboratory cables with 4mm laboratory plug, socket and pin part with contact protection, stackable. For establishing safe electric plug-in connections for exercise installations.

CABLE SET	BIBB E-PN	
Data:		
Dimensions (LxWxH)	mm	300x200x200
Weight	kg	2,5
For exercises according to		BiBB, BR
Laboratory cable, red, 42 pcs., length	mm	250
Laboratory cable, blue, 25 pcs., length	mm	250
Laboratory cable, red, 9 pcs., length	mm	500
Laboratory cable, blue, 4 pcs., length	mm	500
Laboratory cable, red, 3 pcs., length	mm	1000
Laboratory cable, blue, 3 pcs., length	mm	1000



3.3 Learning topics according to PAL

PAL-PN kit

Material no. **1827003550**

Technical description:

Pneumatic, device set for PAL exercises is suitable for converting the learning targets and learning contents in the technical-industrial training and further education in the sense of the PAL into the pneumatic fundamentals on the basis of real industry products.

Pneumatic components:

Double-acting cylinders, 3/2- and 5/2-way control valves, throttle valves, throttle check valves, rapid exhaust valves, pneumatic logic valves, retarding valves, pneumatic proximity switch, distributor with 3/2-way control valve.

Installation material:

Cable duct, clamping strip with nameplate, plastic tube, T-connection, angle connection, closing plug, connection piece, spacer pin

PAL KIT PNEUMATICS

Data:

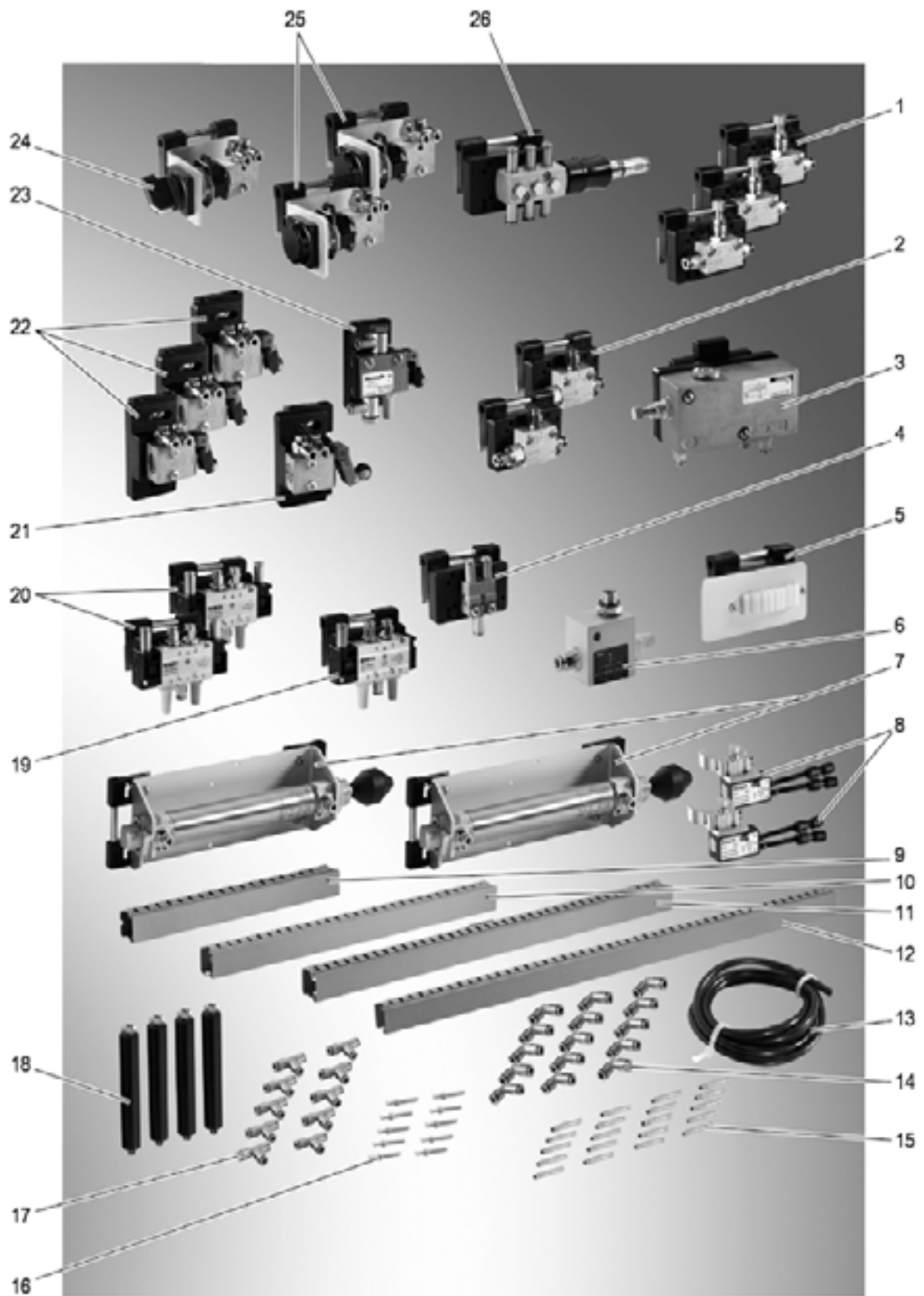
Dimensions (LxWxH)	mm	450x330x160
Weight	7	kg
Mounting type		Snap in
For exercises according to		PAL
Operating pressure	bar	6
Recommended accessories:	Pcs	Mat. no.
Grooved plate case	1	1827003352
Tube cutter	1	1823391390
Tool bag	1	1827003025
Recommended teachware:		Mat. no.
Textbooks and teaching material:		
Overhead slides, pneumatic - de/en		R900084596
Symbol stencil Fluidik HY/PN		R900018486
Pneumatic slide rule - de		R961000803
"Pneumatics" training charts - de/en		R961000802
Sticker symbol case		1827003030
The Pneumatic Trainer, Volume 1 - en		R900018136
Book "Pneumatics. Theory & Application" - en		R927001146
Self-study media:		
Basic Pneumatics WebTr@iner single license - de/en/es		1070083007
Media from Basic Pneumatics WebTr@iner - de/en/es		R961001731
PNgraphics, Slides to the book "Pneumatics. Theory and Applications"		R900701018

Device sets on learning topics

3.3 Learning topics according to PAL

PAL-PN kit				Material no.	1827003550
Item	Quantity	Material no.	Designation		
1	3	1827003379	Throttle check valve G1/8; d=1 mm; SI		
2	2	1827003382	OR G1/8 1-fold; SI		
3	1	1827003385	3/2-way timer valve; G1/8, slide, pneumatically operated, snap in		
4	1	1827003383	AND G1/8 1-fold, SI		
5	1	1827003553	5-fold clamping strip with PAL ID plate		
6	1	1827003098	Rapid exhaust valve G1/8		
7	2	1827003372	Double action cylinder; d=25; s=100 mm; SI		
8	2	1827003224	PN proximity switch with holder		
9	1	1827003561	Cable duct 200 mm PAL; SI		
10	1	1827003564	Cable duct 300 mm PAL; SI		
11	1	1827003566	Cable duct 400 mm PAL; SI		
12	1	1827003567	Cable duct 500 mm PAL; SI		
13	1	1820712010	Plastic tubing 4x1 PU; LE 25 m; black		
14	15	1823380019	Angle bracket 4mm Steckfix		
15	20	1823391629	Double plug; d=4 mm; LE = 1 unit		
16	10	2123204000	End plug		
17	10	1823381043	T-connection d=4 mm; LE = 1 unit		
18	4	1827003554	Spacer pins for grooved plate		
19	1	1827003376	5/2-way control valve G1/8; PN spring return; SI		
20	2	1827003377	5/2-way control valve G1/8; PN pulse; SI		
21	1	1827003401	3/2-way control valve M5 roller lever with idle return; SI		
22	3	1827003399	3/2-way control valve M5 roller lever; SI		
23	1	1827003400	3/2-way control valve G1/8 roller lever; SI		
24	1	1827003394	3/2-way control valve M5 rotary switch, snap in		
25	2	1827003392	3/2-way control valve M5 button; SI		
26	1	1827003577	PN distributor with 3/2-way cont. valve; PAL; SI		

3.3 Learning topics according to PAL

PAL-PN kitMaterial no. **1827003550**

Device sets on learning topics

3.3 Learning topics according to PAL

3.3 Learning topics according to PAL

PAL-EL kit; SI

Material no. **1827003551**

Technical description:

Electropneumatics, extension device set, building on the pneumatic device set on PAL exercises, mat. no.: 1827003550

Electropneumatic components:

double-acting cylinders, cylinder switch, 3/2-way control valve manually operated, 3/2- and 5/2-way control valve electrically operated, electrical limit sensor, relay and time relay with base.

Installation material:

Clamping strips with and without labeling, electrical terminal block, nameplates, cable ducts, spacer pins,

Connection pieces, angle connections, T-connections, fastening rail, cable fasteners, carrying angles, buttons, switches, pilot lamps, end sleeves for strands, cables, plastic tube.

PAL-EL KIT, SI

Data:

Dimensions (LxWxH)	mm	450x330x160
Weight	kg	8
Mounting type		Snap in
For exercises according to		PAL
Operating pressure	bar	6
Operating voltage	(DC) V	24
Recommended accessories:	Pcs	Mat. no.
Power supply unit with distributor in plastic box	1	R961001099
Tube cutter	1	1823391390
Tool bag	1	1827003025
Plug 4mm with screw connection	2	1827003211

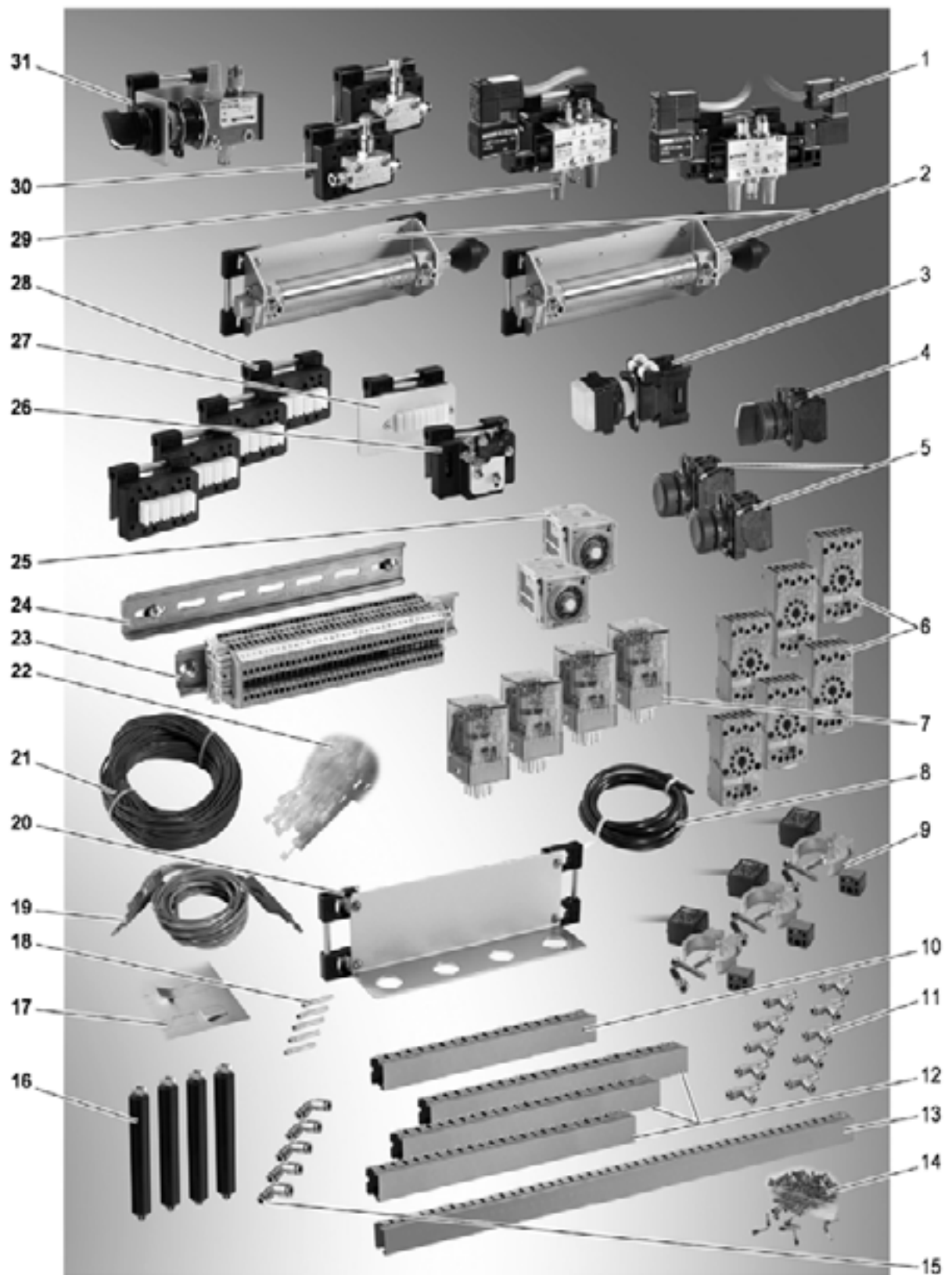
Device sets on learning topics

3.3 Learning topics according to PAL

PAL-EL kit; SI			Material no. 1827003551
Item	Quantity	Material no.	Designation
1	1	1827003556	5/2-way pulse solenoid valve G1/8; PAL; SI
2	2	1827003372	Double action cylinder; d=25; s=100 mm; SI
3	1	1827001988	Pilot lamp 24 V=, 50 mA
4	1	1827001992	Electric rotary switch 1 open contact/1 closed contact
5	2	1827001991	Electric button 1 open contact/1 closed contact
6	6	R961002699	Relay socket
7	4	R961002709	Relay with 3 changeover contacts
8	1	1820712010	Plastic tubing 4x1 PU; LE 25 m; black
9	3	1827003570	Cylinder switch with holder PAL; SI;
10	1	1827003561	Cable duct 200 mm PAL; SI
11	10	1823381043	T-connection d=4 mm; LE = 1 unit
12	3	1827003562	Cable duct 235 mm PAL; SI
13	1	1827003567	Cable duct 500 mm PAL; SI
14	1	R900016169	CONDUCTOR END SLEEVE 0.75-L2= 7.9MM FLANGE SIZE; Delivery unit = 100
15	5	1823380019	Angle bracket 4mm Steckfix
16	4	1827003554	Spacer pins for grooved plate
17	80	1829929200	Sticker labels; 80 pcs.
18	5	1823391629	Double plug; d=4 mm; LE = 1 unit
19	1	1827003005	Red and blue connection cable; 1.5 m each; plug/clamp
20	1	1827003558	Carrying angle 4-fold PAL; SI
21	1	1827003031	Blue electrical cable 0.75 mm ² ; 25 m
22	1	1821025000	Cable fastener L = 130 mm
23	1	1827003559	TERMINAL BLOCK 35-FOLD PAL, SI
24	1	1827003560	Hat rail 250 mm; PAL; SI
25	2	R961002710	Time relay with pickup or dropout delay
26	1	1827003569	Limit switch with roller PAL; SI
27	1	1827003553	5-fold clamping strip with PAL ID plate
28	4	1827003574	5-fold clamping strip PAL; snap in
29	1	1827003555	5/2-way solenoid valve G1/8; PAL; SI
30	2	1827003379	Throttle check valve G1/8; d=1 mm; SI
31	1	1827003557	3/2-way control valve G1/8 with rotary switch PAL; SI

3.3 Learning topics according to PAL

PAL-EL kit; SI

Material no. **1827003551**

Device sets on learning topics

4 Pneumatic components

4.1	Cylinders	44
	• Cylinders:	
	– single-acting	
	– double-acting	
	– double-acting with load	
	• Cylinder switches:	
	– Cylinder switch with adapter	
	– Cylinder switch with holder	
	– Cylinder switch with holder, kit, PAL	
	• Cylinder cams:	
	– Steel cams	
	– Plastic cams	
4.2	Valves	50
	• Directional valves	
	– manually operated	
	– mechanically	
	– pneumatically	
	– electrically	
	• Flow control valves	
	• Logic valves	
	• Valve terminal	
4.3	Special components	72
	• Maintenance units	
	• Pressure controller	
	• Pressure gauges	
	• P/E converter	
	• Reflex nozzle	
	• Suction nozzle	
	• Counter	
	• Distributor	
	• Tube support	

Pneumatic components

4.1 Cylinders

Single action cylinder d=25; s=50 mm; SIMaterial no. **1827003371****Technical description**

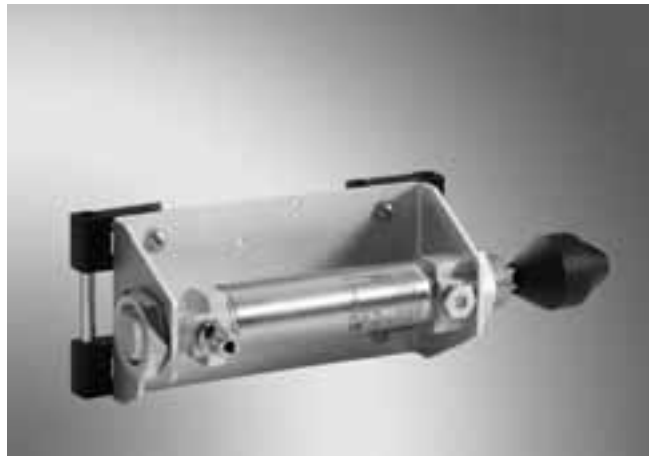
Single-acting cylinder, 1 connection, retracted without pressure, dampened retraction into the end positions, suitable for contactless signal emission.

With return spring, damping disks for end position damping, solenoid piston for contactless signal emission, cylinder tube and piston rod of stainless steel, twistable, with mounted PVC cams, with Ø 4 mm plug-in connection, with mounting system for grooved plate in 25 mm grid width.

EWZ D=25MM H=50MM SI

Data:

Dimensions (LxWxH)	mm	210x71x80
Weight	kg	0,55
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
MNI series	Mat. no.:	0822434303
BRP catalog: R499 050 203 / 2005-02; page: 1.24		
Max. stroke	mm	50
Operating pressure	(min/max) bar	1 / 10
Piston diameter	mm	25
Piston force, extending	(at 6 bar) N	234
Spring force	(min-max) N	23,2 - 31,4

**Double action cylinder; d=25; s=100 mm; SI**Material no. **1827003372****Technical description**

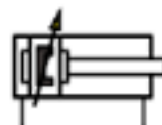
Double-acting cylinder, 2 connections, extending and retracting with pressure, adjustable dampening for the retraction into the end positions, suitable for contactless signal emission.

Adjustable end position dampening, solenoid piston for contactless signal emission, cylinder tube and piston rod of stainless steel, with mounted PVC cam, with Ø 4 mm plug-in connection, with mounting system for grooved plate in 25 mm grid width.

DWZ D=25MM H=100MM SI

Data:

Dimensions (LxWxH)	mm	270x75x80
Weight	kg	0,664
Mounting type	Snap-in	
For exercises according to	BiBB, PAL	
Industry type / Industry information:		
MNI series	Mat. no.:	0822334505
BRP catalog: R499 050 203 / 2005-02; page: 1.24		
Max. stroke	mm	100
Operating pressure	(min/max) bar	1 / 10
Piston diameter	mm	25
Piston force, extending	(at 6 bar) N	259
Piston force, retracting	(at 6 bar) N	216



4.1 Cylinders

**Load simulator d=25 mm, s=100 mm,
m=3,4 kg**

Material no. **R961003214**

Technical description

Double-acting cylinder, 2 connections, extending and retracting with pressure, adjustable end position dampening. The cylinder is attached to an aluminum profile, the piston rod bears the test load, solenoid piston for contactless signal emission, cylinder tube and piston rod of stainless steel, assembled test load of steel, with Ø 4 mm plug-in connection

LASTSIMULATOR D = 25 MM, H = 100 MM, PN

Data:

Dimensions (LxWxH)	mm	300x70x70
Weight	kg	3,9
Mounting type	screwed with nut	
Max. stroke	mm	100
Operating pressure	(min/max) bar	1 / 10
Piston diameter	mm	25
Piston force, extending	(at 6 bar) N	259
Piston force, retracting	(at 6 bar) N	216



Electric cylinder switch with adapter; BS

Material no. **1827003437**

Technical description

Cylinder switch cube, electrical (reed contact), 2 conductors, normally open contact operated by solenoid in the cylinder piston, switching point can be adjusted depending on the stroke by means of the clamp holder.

Switch with plug-in connection, adapter with power socket, short cable and adapter housing with contact protection, 4 mm sockets, moveable clamp holder for round cylinder 25 mm diameter, mounted at the switch, LED switching display.

ZYLINDERSCHALTER ELEKTR. MIT ADAPT. BS

Data:

Dimensions (LxWxH)	mm	143x66x35
Weight	kg	0,054
Mounting type	Clamp connection, can be displaced	

Industry type / Industry information:

SN2 series	Sensor	0830100468
BRP catalog: R499 050 203 / 2005-02; page: 1.448		
Operating voltage	(AC/DC) V	12-30 / 12-36
Switching current	A	0,3
Switching capacity	VA	10
Switching frequency	Hz	<300
With reverse polarity protection	yes	
Type of protection	IEC 60529	IP 67



Pneumatic components

4.1 Cylinders

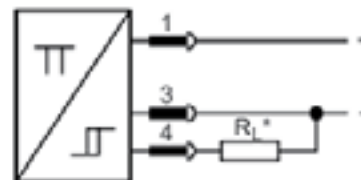
**Electronic cylinder switch with 3-pin cable
(with short-circuit protection)**Material no. **R961003980****Technical description**

Cylinder switch cube, electronic contactless PNP, 3 conductors, operated by solenoid in the cylinder piston. Cylinder switch with M8x1 connector and LED switching display, 1,5 m long 3-strand cable with socket M8x1 and 4 mm plugs.

ZYLINDERSCHALTER ELEKTR.+KABEL 3POL BS

Data:

Dimensions (LxWxH)	mm	100x100x30
Weight	kg	0,125
Mounting type	screwed, clamp holder	
Industry type / Industry information:		
SN2 series	Mat. no.:	0830100480
BRP catalog: R499 050 203 / 2005-02; page: 1.448		
Operating voltage	(DC) V	10-30
Switching current	A	0,13
Switching frequency	Hz	<2000
With reverse polarity protection	yes	
Short-circuit-proof	yes	
Type of protection	IEC 60529	IP 67

**Clamp Holder for round cylinders, d = 25 mm**Material no. **1827020069****Technical description**

Clamp holder for mounting electrical cylinder switches at round cylinders with Ø 25 mm, moveable

CB1-MNI-025-025-SN1-SN2

Data:

Dimensions (LxWxH)	mm	50x50x50
Weight	kg	0,025
Mounting type	screwed, clamping	
Material	Aluminum	anodized



4.1 Cylinders

Socket LED form C; BS

Material no. **1827003354**

Technical description

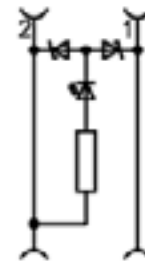
Socket with 2 connections for laboratory plugs, forwarding of the signals to valve spool, signal rectification and thus, reverse polarity protection, optical display.

Plastic housing with contact-protected 4 mm test sockets, contacting to the valve spool via socket coupling.

GERAETESTECKDOSE LED FORM C BS

Data:

Dimensions (LxWxH)	mm	39x17x28
Weight	kg	0,018
Mounting type	screwed	
For exercises according to	BiBB	
Operating voltage	(AC-DC) V	22-26
Socket coupling according to	DIN Form C	43650
Type of protection	IEC 60529	IP 20



PN proximity switch with holder

Material no. **1827003224**

Technical description

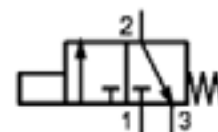
Pneumatic proximity switch with 3 connections, 2 spool positions, activation by means of a permanent solenoid in the piston of a cylinder. Switching point can be adjusted depending on the stroke by moving the clamp holder.

Plastic housing, quick plug connector brass, optical display of the spool position, vent hole, connections with intermediate pipes and straight Ø 4 mm plug-in connection, clamp holder is fixedly flanged to the sensor.

PN-NAEHERUNGSSCHALTER MIT HALTER

Data:

Dimensions (LxWxH)	mm	110x45x40
Weight	kg	0,046
Mounting type	clamped, can be displaced	
Industry type / Industry information:		
	Mat. no.:	0820212201
BRP catalog: R499 050 203 / 2005-02; page: 1.364		
Operating pressure	(min/max) bar	2 / 6
Response time	ms	12
Nominal flow	l/min	40



Pneumatic components

4.1 Cylinders

Cylinder switch with holder PAL; SI;Material no. **1827003570****Technical description**

Cylinder switch cube, electrical (reed contact), 2 conductors, normally open contact operated by solenoid in the cylinder piston, switching point can be adjusted depending on the stroke by means of the clamp holder. Switch with 2-pin cable and LED switching display, end with end sleeves for strands, moveable clamp holder for round cylinder Ø 25 mm,

ZYLINDERSCHALTER MIT HALTER PAL, SI,

Data:

Dimensions (LxWxH)	mm	100x100x40
Weight	kg	0,124
Mounting type	clamped, can be displaced	
Operating voltage	(AC/DC) V	12-240 / 12-60
Switching current	A	0,13
Switching capacity	VA	10
Switching frequency	Hz	<300
With reverse polarity protection	yes	
Short-circuit-proof	no	
Type of protection	IEC 60529	IP 67

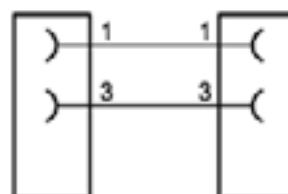
**Device adapter for electric cylinder switch; BS**Material no. **1827003221****Technical description**

Adapter for cylinder switch, with plug-in connection M8x1, short cable and adapter housing with 4 mm test sockets.

GERAETEADAPTER FUER ELEKTR. ZYLINDER-SCH

Data:

Dimensions (LxWxH)	mm	39x17x28
Weight	kg	0,020
Mounting type	screwed	
Operating voltage	(AC/DC) V	30 / 36
Switching current	A	0,3
Switching capacity	VA	10
Type of protection	IEC 60529	IP 67



4.1 Cylinders

Steel cam M10x1,25

Material no. **1823219007**

Technical description

For creating a mechanical, stroke-dependent signal via cam, can be mounted at the piston rod, activates roller lever or inductive proximity switch.

Conical chamfer on both sides for activating a roller lever that again drives valves and/or switches.

NOCKEN 1 823 219 007

Data:

Dimensions (LxWxH)	mm	42x30x30
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Weight	kg	0,144
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Mounting type	screwed
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PVC cam M10x1,25

Material no. **1823219004**

Technical description

For creating a mechanical, stroke-dependent signal via cam, can be mounted at the piston rod, activates roller lever or capacitive proximity switch.

Conical chamfer on both sides for activating a roller lever that again drives valves and/or switches.

SCHALTNOCKEN

Data:

Dimensions (LxWxH)	mm	42x30x30
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Weight	kg	0,025
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Mounting type	screwed
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Pneumatic components

4.2 Valves / Manual directional valves

3/2-way control valve M5 button; SIMaterial no. **1827003392****Technical description**

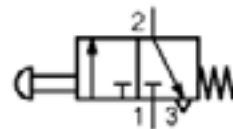
3/2-way control valve, manually operated via pushbutton with return spring, 2 connections, 1 free hole, 2 spool positions in rest position closed.

Seat valve, housing of aluminum, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL M5 TASTER, SI

Data:

Dimensions (LxWxH)	mm	84x69x50
Weight	kg	0,186
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
AP series	Mat. no.:	0820408007
RB catalog 1987 765 015 / 98.02; page: 3.73		
Activation type	manually	
Nominal flow	l/min	250
Operating pressure	(min/max) bar	0 / 10
Operating force	N	25
Connection thread	M5	

**3/2-way adjustable control valve; -1 to 0 bar**Material no. **1827003246****Technical description**

3/2-way control valve, pneumatically pilot operated, switching pressure adjustable.

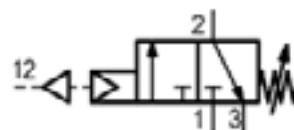
The 1st stage (limit switch/pilot control stage) sends an output signal to the 2nd stage as soon as the input signal has reached a preset level.

Seat valve, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL EINSTELLBAR, -1 BIS 0 BAR

Data:

Dimensions (LxWxH)	mm	120x70x65
Weight	kg	0,232
Mounting type	Snap-in	
For exercises according to	BiBB, BR	
Nominal flow	l/min	170
Operating pressure (max) bar	6	
Switching pressure bar	-1 to 0	
Switching hysteresis mbar	80	



4.2 Valves / Manual directional valves

3/2-way control valve G1/8 button; SI

Material no. **1827003393**

Technical description

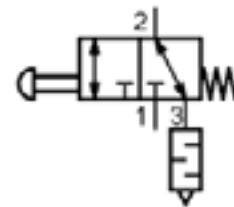
3/2-way control valve, manually directly operated via pushbutton with return spring, 3 connections, 2 spool positions, in rest position closed, with silencer.

Spool valve, housing of stainless steel, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL G1/8 TASTER, SI

Data:

Dimensions (LxWxH)	mm	100x70x65
Weight	kg	0,32
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
ST series	Mat. no.:	0820402024
BRP catalog: R499 050 203 / 2005-02; page: 8.30		
Activation type	manually	
Nominal flow	l/min	280
Operating pressure	(min/max) bar	-0,95 / 10
Connection thread	G1/8	



3/2-way control valve M5 rotary switch; SI

Material no. **1827003394**

Technical description

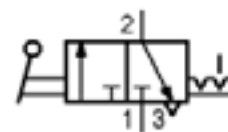
3/2-way control valve, manually operated via rotary switch, 3 connections, 2 spool positions, in rest position closed.

Seat valve, aluminum housing, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL M5 KNEBEL, SI

Data:

Dimensions (LxWxH)	mm	100x70x50
Weight	kg	0,192
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
AP series	Mat. no.:	0820408007
RB catalog 1987 765 015 / 98.02; page: 3.73		
Activation type	manually	
Nominal flow	l/min	250
Operating pressure	(min/max) bar	0 / 10
Connection thread	M5	



Pneumatic components

4.2 Valves / Manual directional valves

3/2-way control valve G1/8 emergency off; SIMaterial no. **1827003395****Technical description**

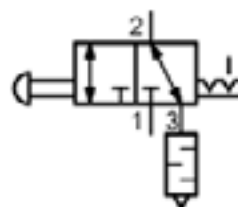
3/2-way control valve, manually operated by means of mushroom button with detent and turn-to-reset feature, 3 connections, 2 spool positions, silencer.

Spool valve, housing of stainless steel, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL G1/8 PN NOT-AUS, SI

Data:

Dimensions (LxWxH)	mm	115x69x65
Weight	kg	0,356
Mounting type		Snap-in
For exercises according to		BR
Industry type / Industry information:		
ST series	Mat. no.:	0820402024
BRP catalog: R499 050 203 / 2005-02; page: 8.3		
Activation type		manually
Nominal flow	l/min	280
Operating pressure	(min/max) bar	- 0,95 / 10
Connection thread		G1/8

**5/2-way control valve G1/8 button; SI**Material no. **1827003396****Technical description**

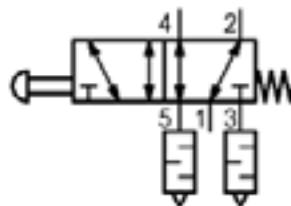
5/2-way control valve, manually operated via pushbutton with return spring, 5 connections, 2 spool positions, with 2 silencers.

Spool valve, housing of stainless steel, metal seals, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/2-WEGEVENTIL G1/8 TASTER, SI

Data:

Dimensions (LxWxH)	mm	115x69x65
Weight	kg	0,386
Mounting type		Snap-in
For exercises according to		BiBB
Industry type / Industry information:		
ST series	Mat. no.:	0820403024
BRP catalog: R499 050 203 / 2005-02; page: 8.12		
Activation type		manually
Nominal flow	l/min	280
Operating pressure	(min/max) bar	0,95 / 10
Connection thread		G1/8



4.2 Valves / Manual directional valves

5/2-way control valve G1/8 with rotary switch; SI

Material no. **1827003397**

Technical description

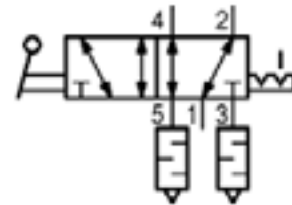
5/2-way control valve, manually operated via rotary switch with 2 stay-put positions, 5 connections, 2 spool positions, with 2 silencers.

Spool valve, housing of stainless steel, metal seals, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/2-WEGEVENTIL G1/8 KNEBEL, SI

Data:

Dimensions (LxWxH)	mm	115x69x65
Weight	kg	0,386
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
ST series	Mat. no.:	0820403024
BRP catalog: R499 050 203 / 2005-02; page: 8.12		
Activation type	manually	
Nominal flow	l/min	280
Operating pressure	(min/max) bar	0,95 / 10
Connection thread	G1/8	



5/3-way control valve G1/4 rotary hand switch; SI

Material no. **1827003398**

Technical description

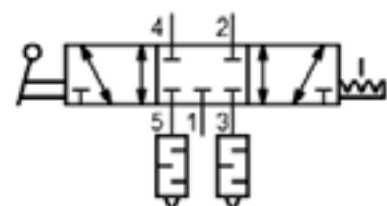
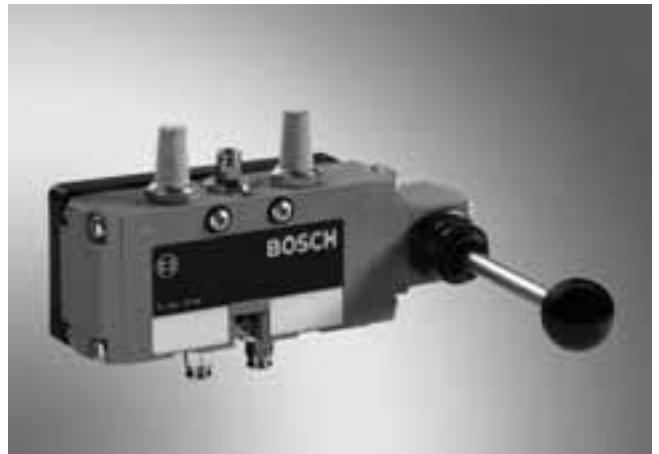
5/3-way control valve, manually operated via hand lever with 3 stay-put positions, 5 connections, 3 spool positions, 2 silencers, middle position in all connections closed.

Spool valve, housing of fiber-glass reinforced plastic, elastic seal, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/3-WEGEVENTIL G1/4 HANDHEBEL, SI

Data:

Dimensions (LxWxH)	mm	160x150x91
Weight	kg	0,608
Mounting type	Snap-in	
For exercises according to	BR	
Industry type / Industry information:		
	Mat. no.:	0820410100
RB catalog 1987 765 015 / 98.02; page: 3.100		
Activation type	manually	
Operating pressure	(max) bar	10
Nominal flow	l/min	1200
Connection thread	G1/4	



Pneumatic components

4.2 Valves / Manual directional valves

3/2-way control valve G1/8 with rotary switchMaterial no. **1827003469****Technical description**

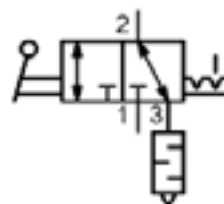
3/2-way control valve, manually operated via rotary switch with 2 stay-put positions, 3 connections, 2 spool positions, in rest position closed.

Spool valve, housing of stainless steel, metal seals, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGE-VENTIL G1/8 KNEBEL

Data:

Dimensions (LxWxH)	mm	115x69x65
Weight	kg	0,374
Mounting type	Snap-in	
For exercises according to	BiBB, BR	
Industry type / Industry information:		
ST series	Mat. no.:	0820402024
BRP catalog: R499 050 203 / 2005-02; page: 8.3		
Activation type	manually	
Nominal flow	l/min	280
Operating pressure	(min/max) bar	- 0,95 / 10
Connection thread	G1/8	

**3/2-way control valve G1/8 with rotary switch PAL; SI**Material no. **1827003557****Technical description**

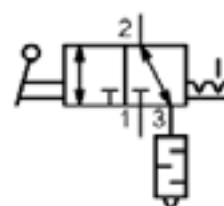
3/2-way control valve, manually operated via rotary switch with 2 stay-put positions, 3 connections, 2 spool positions, in rest position closed.

Spool valve, housing of stainless steel, metal seals, connections with Ø 4 mm and Ø 6 mm plug-in connection, with mounting system for grooved plate.

3/2 WEGEVENTIL G1/8 KNEBEL PAL, SI

Data:

Dimensions (LxWxH)	mm	115x68x69
Weight	kg	0,328
Mounting type	Snap-in	
For exercises according to	PAL, BR	
Industry type / Industry information:		
ST series	Mat. no.:	0820402024
BRP catalog: R499 050 203 / 2005-02; page: 8.3		
Activation type		manually
Nominal flow	l/min	280
Operating pressure	(min/max) bar	- 0,95 / 10
Connection thread		G1/8



4.2 Valves / Manual directional valves

Coupling connector

Material no. **R900891177**

Technical description

2/2-way control valve with coupling connector, manually operated, 2 connections, 2 spool positions.

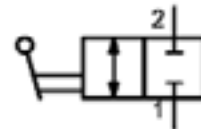
Brass housing nickel-plated, connection with Ø 6 mm plug-in connection.

KUPPLUNGSSTECKER HPF-ZP14

KPL.

Data:

Dimensions (LxWxH)	mm	88x30x20
Weight	kg	0,09
Mounting type		plugged in
Plug-in connection		Ø 6 mm



Pneumatic components

4.2 Valves / Mechanical directional valves

3/2-way control valve M5 roller lever; SIMaterial no. **1827003399****Technical description**

3/2-way control valve, mechanically operated by means of a roller lever, 3 connections, 2 spool positions with spring return, in rest position closed.

Seat valve, housing of aluminum, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL M5 TASTROLLE, SI

Data:

Dimensions	mm	71x69x61
Weight	kg	0,172
Mounting type	Snap-in	
For exercises according to	BiBB, PAL	

Industry type / Industry information:

AP series	Mat. no.:	0820408002
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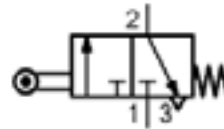
RB catalog 1987 765 015 / 98.02; page: 3.73

Activation type	mechanically
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Nominal flow	l/min	250
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Operating pressure	(min/max) bar	0 / 10
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Connection thread	M5
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**3/2-way control valve G1/8 roller lever; SI**Material no. **1827003400****Technical description**

3/2-way control valve, mechanically operated by means of a roller lever, 3 connections, 2 spool positions, 1 silencer, in rest position closed.

Spool valve, housing of stainless steel, metal seals, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL G1/8 TASTROLLE, SI

Data:

Dimensions (LxWxH)	mm	77x77x64
Weight	kg	0,34
Mounting type	Snap-in	
For exercises according to	BR	

Industry type / Industry information:

ST series	Mat. no.:	0820402002
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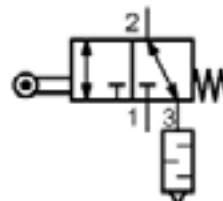
BRP catalog: R499 050 203 / 2005-02; page: 8.3
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Activation type	mechanically
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Nominal flow	l/min	280
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Operating pressure	(min/max) bar	-0,95 / 10
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Connection thread	G1/8
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4.2 Valves / Mechanical directional valves

3/2-way control valve M5 roller lever with idle return; SI

Material no. **1827003401**

Technical description

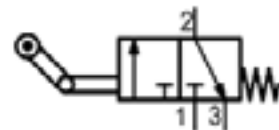
3/2-way control valve, mechanically operated by means of a roller lever with idle return, 3 connections, 2 spool positions with spring return, in rest position closed.

Seat valve, housing of aluminum, elastic seals, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL M5 LEERROLLE, SI*

Data:

Dimensions (LxWxH)	mm	71x68x69
Weight	kg	0,17
Mounting type	Snap-in	
For exercises according to	BiBB, PAL	
Industry type / Industry information:		
AP series	Mat. no.:	0820408003
RB catalog 1987 765 015 / 98.02; page: 3.73		
Activation type	mechanically	
Nominal flow	l/min	250
Operating pressure	(min/max) bar	0 / 10
Connection thread	M5	



3/2-way control valve G1/8 roller lever with idle return; SI

Material no. **1827003402**

Technical description

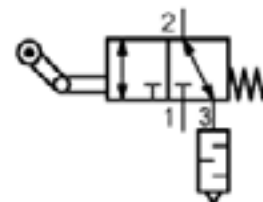
3/2-way control valve, mechanically operated by means of a roller lever with idle return, with spring return, 3 connections, 2 spool positions, 1 silencer, in rest position closed.

Spool valve, housing of stainless steel, metal seals, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL G1/8 LEERROLLE, SI

Data:

Dimensions (LxWxH)	mm	90x76x62
Weight	kg	0,34
Mounting type	Snap-in	
For exercises according to	BR	
Industry type / Industry information:		
ST series	Mat. no.:	0820408003
BRP catalog: R499 050 203 / 2005-02; page: 8.3		
Activation type	mechanically	
Nominal flow	l/min	280
Operating pressure	(min/max) bar	-0,95 / 10
Connection thread	G1/8	



Pneumatic components

4.2 Valves / Pneumatic directional valves

3/2-way control valve G1/8; PN spring return; SIMaterial no. **1827003374****Technical description**

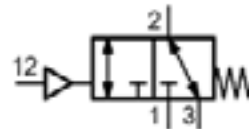
3/2-way control valve, pneumatically operated with spring return, 3 connections, 2 spool positions, 1 silencer, closed in rest position, flow in both directions possible, suitable for vacuum.

Steel slide ground in, housing of stainless steel, metal seals, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL G1/8, PN UMSCHALTUNG, SI

Data:

Dimensions (LxWxH)	mm	81x64x47
Weight	kg	0,302
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
ST series	Mat. no.:	0820212001
BRP catalog: R499 050 203 / 2005-02; page: 7.24		
Activation type	pneumatically	
Nominal flow	l/min	280
Operating pressure	(min/max) bar	0 / 10
Pilot pressure	bar	2
Connection thread	G1/8	

**3/2-way control valve G1/8; PN pulse; SI**Material no. **1827003375****Technical description**

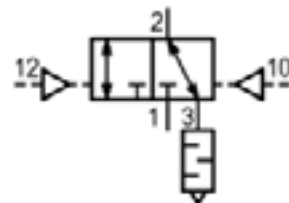
3/2-way control valve, pneumatically operated on both sides, 3 connections, 2 spool positions, 1 silencer, closed in rest position, flow in both directions possible, suitable for vacuum.

Steel slide ground in, housing of stainless steel, metal seals, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL G1/8, PN IMPULS, SI

Data:

Dimensions (LxWxH)	mm	100x60x47
Weight	kg	0,322
Mounting type	Snap-in	
For exercises according to	BR	
Industry type / Industry information:		
ST series	Mat. no.:	0820213001
BRP catalog: R499 050 203 / 2005-02; page: 7.24		
Activation type	pneumatically	
Nominal flow	l/min	280
Operating pressure	(max) bar	10
Pilot pressure	bar	1,8
Connection thread	G1/8	



4.2 Valves / Pneumatic directional valves

5/2-way control valve G1/8; PN spring return; SI

Material no. **1827003376**

Technical description

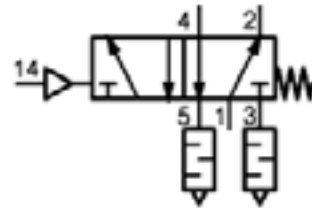
5/2-way control valve, pneumatically operated with spring return, 5 connections, 2 spool positions, 2 silencers.

Spool valve, non-overlapping, housing of aluminum, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/2-WEGEVENTIL G1/8, PN UMSCHALTUNG, SI

Data:

Dimensions (LxWxH)	mm	77x62x48
Weight	kg	0,222
Mounting type		Snap-in
For exercises according to		BiBB, PAL
Industry type / Industry information:		
WV02 series	Mat. no.:	0820238001
Industry type / Industry information:		
BRP catalog: R499 050 203 / 2005-02; page: 7.5		
Activation type		pneumatically
Nominal flow	l/min	500
Operating pressure	(min/max) bar	2 / 10
Pilot pressure at 6 bar	bar	2,8
Connection thread		G1/8



5/2-way control valve G1/8; PN pulse; SI

Material no. **1827003377**

Technical description

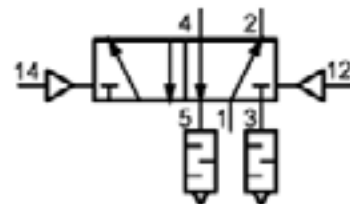
5/2-way control valve, pneumatically operated on both sides, 5 connections, 2 spool positions, 2 silencers, pulse valve with identical piston surfaces.

Spool valve, non-overlapping, housing of aluminum, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/2-WEGEVENTIL G1/8, PN IMPULS, SI

Data:

Dimensions (LxWxH)	mm	82x62x48
Weight	kg	0,232
Mounting type		Snap-in
For exercises according to		BiBB, PAL
Industry type / Industry information:		
WV02 series	Mat. no.:	0820238002
BRP catalog: R499 050 203 / 2005-02; page: 7.5		
Activation type		pneumatically
Nominal flow	l/min	500
Operating pressure	(min/max) bar	1 / 10
Pilot pressure	bar	1,5
Connection thread		G1/8



Pneumatic components

4.2 Valves / Pneumatic directional valves

5/3-way control valve G1/8; mid. pos. closed PN; SIMaterial no. **1827003378****Technical description**

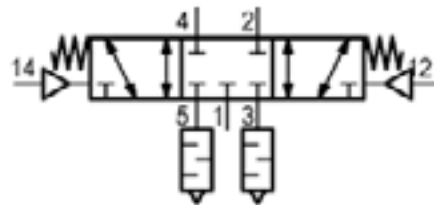
5/3-way control valve, pneumatically operated on both sides, 5 connections, 3 spool positions, 2 silencers, middle position in all connections closed.

Spool valve, non-overlapping, housing of aluminum, elastic seal, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/3-WEGEVENTIL G1/8,PN SPERR-MST.,SI

Data:

Dimensions (LxWxH)	mm	91x62x48
Weight	kg	0,236
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
WV02 series	Mat. no.:	0820239001
BRP catalog: R499 050 203 / 2005-02; page: 77		
Activation type	pneumatically	
Nominal flow	l/min	400
Operating pressure	(min/max) bar	1 / 10
Pilot pressure	bar	2,2
Connection thread	G1/8	

**3/2-way control valve G1/8 amplifier two-stage; SI**Material no. **1827003389****Technical description**

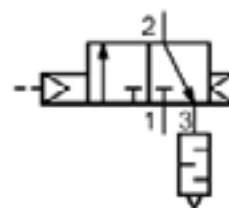
2-stage pressure amplifier with 3/2-way control valve, 3 connections, 2 spool positions, pneumatically operated by pneumatic amplifier stage, e.g. for the contactless signal recording with reflex nozzles.

Seat valve, housing and amplifier head of aluminum and plastic, sealing elements of perbunan, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL G1/8 VERSTAERKER 2 STUFEN

Data:

Dimensions (LxWxH)	mm	100x70x70
Weight	kg	0,39
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
	Mat. no.:	0820212103
RB catalog 1987 765 015 / 98.02; page: 3.69		
Activation type		pneumatically
Nominal flow	l/min	220
Operating pressure	(min/max) bar	2 / 10
Pilot pressure	(min/max) mbar	12 / 500
Air consumption at 6 bar	l/min	3
Connection thread		G1/8



4.2 Valves / Pneumatic directional valves

3/2-way control valve G1/8; dynamic pressure; SI

Material no. **1827003380**

Technical description

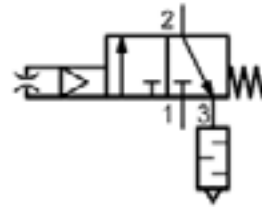
3/2-way control valve, pneumatically operated by closing the nozzle via pilot control stage, with spring return, 3 connections, 2 spool positions, 1 silencer.

Spool valve ground in, non-overlapping, housing and cover of stainless steel, pilot pressure head of aluminum, metal seals, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL G1/8, STAUDRUCK, SI

Data:

Dimensions (LxWxH)	mm	74x68x62
Weight	kg	0,35
Mounting type	Snap-in	
For exercises according to	BR	
Industry type / Industry information:		
ST series	Mat. no.:	0820402015
BRP catalog: R499 050 203 / 2005-02; page: 8.9		
Activation type	pneumatically	
Nominal flow	l/min	280
Operating pressure	(min/max) bar	2 / 10
Air consumption at 6 bar	l/min	2,5
Connection thread	G1/8	



Rapid exhaust valve G1/8

Material no. **1827003098**

Technical description

Rapid exhaust valve, pneumatically activated, 2 connections, 1 silencer.

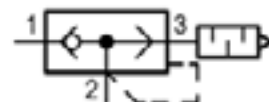
Pressure feedback from actuator port A (2) to the connection R (3) with the following effect: in case of an external pressure build-up at A (2), connection R (3) is released, e.g. for venting fast rewinding cylinders by external force.

Seat valve, housing of aluminum, elastic seal, for the installation into the piping close to the consumer, connection with Ø 4 mm plug-in connection.

SCHNELLENTLUEFTUNGSVENTIL

Data:

Dimensions (LxWxH)	mm	70x48x25
Weight	kg	0,098
Mounting type	mobile, plugged in	
Activation type	pneumatically	
Nominal flow, 1 to 2	l/min	420
Nominal flow, 2 to 3	l/min	1200
Connection thread	G1/8	



Pneumatic components

4.2 Valves / Pneumatic directional valves

Rapid exhaust valve G1/4, SIMaterial no. **1827003381****Technical description**

Rapid exhaust valve, pneumatically activated, 2 connections, 1 silencer.

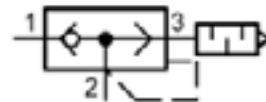
Pressure feedback from actuator port 2 to the connection 3 with the following effect: in case of an external pressure build-up at 2, connection 3 is released, for the installation into the piping close to the consumer, e.g. for venting fast rewinding cylinders by external force.

Seat valve, housing of aluminum, elastic seal, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

SCHNELLENTLUEFTUNGS-VENTIL G1/4, SI

Data:

Dimensions (LxWxH)	mm	117x53x55
Weight	kg	0,27
Mounting type	Snap-in	
For exercises according to	BR	
Industry type / Industry information:		
	Mat. no.:	0821002003
BRP catalog: R499 050 203 / 2005-02; page: 9.60		
Activation type	pneumatically	
Nominal flow, 1 to 2	l/min	1000
Nominal flow, 2 to 3	l/min	2050
Connection thread	G1/4	

**3/2-way adjustable control valve M5; 2 to 8 bar; SI**Material no. **1827003388****Technical description**

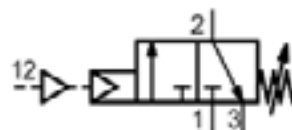
3/2-way pressure switching valve, adjustable, 2 connections, 1 free hole, 2 spool positions, positive output signal as soon as the input signal reaches a preselected switching pressure, hysteresis between switch-on and switch-off, e.g. as accumulator charging valve for the pressure connection/ switch-off

Seat valve, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL M5 EINSTELLBAR 2-8 BAR, S

Data:

Dimensions (LxWxH)	mm	120x70x65
Weight	kg	0,23
Mounting type	Snap-in	
For exercises according to	BiBB	
Activation type	pneumatically	
Nominal flow at 4 bar	l/min	170
Switching pressure, adjustable	(min/max) bar	2 / 8
Hysteresis	%	4



4.2 Valves / Pneumatic directional valves

3/2-way timer valve M5; SI

Material no. **1827003384**

Technical description

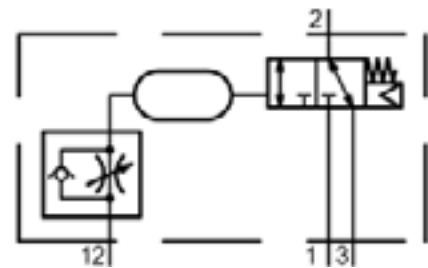
3/2-way control valve, pneumatically operated, with spring return, manually adjustable time delay, spring return takes effect without delay.

Spool valve, installed on connecting plate, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL M5 ZEITVERZÖGERERT, SL

Data:

Dimensions (LxWxH)	mm	110x68x60
Weight	kg	0,433
Mounting type	Snap-in	
For exercises according to	BR	
Activation type	pneumatically	
Operating pressure (min/max) bar	2 / 10	
Pilot pressure bar	10	
Time delay (min/max) s	0,25 - 5	



3/2-way timer valve G1/8; SI

Material no. **1827003385**

Technical description

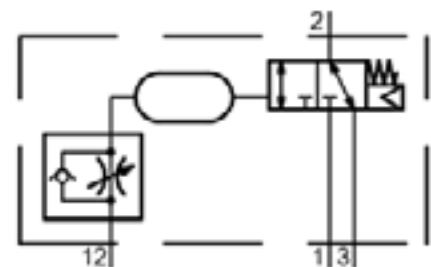
3/2-way control valve, pneumatically operated, with spring return, manually adjustable time delay, spring return takes effect without delay, 3 connections for directional valve, 1 control connection.

Spool valve, housing of aluminum, elastic seal, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2-WEGEVENTIL G1/8, ZEITVERZÖGERERT, SI

Data:

Dimensions (LxWxH)	mm	136x88x68
Weight	kg	0,616
Mounting type	Snap-in	
For exercises according to	BiBB, PAL	
Industry type / Industry information:		
Mat. no.:	0820215003	
RB catalog 1987 765 015 / 98.02; page: 4.69		
Activation type	pneumatically	
Nominal flow	l/min	300
Operating pressure	(min/max) bar	2 / 10
Pilot pressure	(min/max) bar	2 / 10
Time delay	(min/max) s	0,15 - 10
Connection thread	G1/8	



Pneumatic components

4.2 Valves / Electrical directional valves

3/2-way solenoid control valve M5 spring return; SIMaterial no. **1827003412****Technical description**

3/2-way control valve, electrically operated with spring return, 3 connections, 2 spool positions, in rest position closed, with auxiliary manual operation.

Seat valve, separate spool, connection socket form B, elastic seal, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

3/2WV M5 EL.UMS. SI

Data:

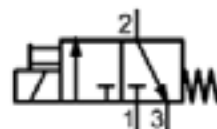
Dimensions (LxWxH)	mm	85x70x70
Weight	kg	0,27
Mounting type		Snap-in
For exercises according to		BiBB

Industry type / Industry information:

Mat. no.: 0820019990

BRP catalog: R499 050 203 / 2005-02; page: 6.379

Activation type		electrically
Nominal flow P(1) to A(2)	l/min	40
Nominal flow A(2) to R(3)	l/min	52
Operating pressure (min/max)	bar	2 / 7
Operating voltage (DC)	V	24
Current consumption	A	0,2
Connection thread		M5

**5/2-way solenoid valve G1/8 with spring return; SI**Material no. **1827003413****Technical description**

5/2-way control valve, electrically operated with spring return, 5 connections, 2 spool positions, 2 silencers, in rest position closed, with auxiliary manual operation.

Spool valve, housing of aluminum, rubber seals, electrical connection form C according to ISO 15217, with connection socket for 4 mm measuring cables, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/2WV G1/8 EL.UMS. SI

Data:

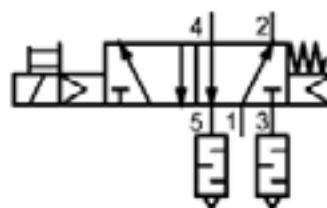
Dimensions (LxWxH)	mm	130x90x50
Weight	kg	0,336
Mounting type		Snap-in
For exercises according to		BiBB

Industry type / Industry information:

WV02 series Mat. no.: 0820038102

BRP catalog: R499 050 203 / 2005-02; page: 6.36

Activation type		electrically
Nominal flow	l/min	500
Operating pressure (min/max)	bar	2 / 10
Operating voltage (DC)	V	24
Current consumption	A	0,084
Connection thread		G1/8



4.2 Valves / Electrical directional valves

5/2-way pulse solenoid valve G1/8; SI

Material no. **1827003414**

Technical description

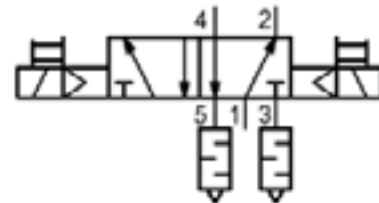
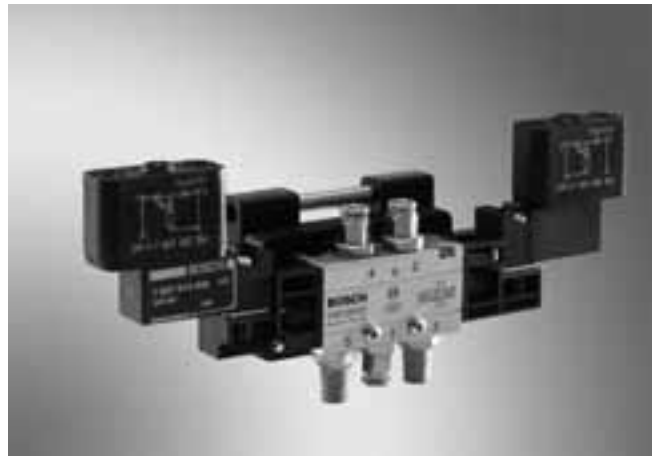
5/2-way control valve, electrically operated on both sides, 5 connections, 2 spool positions, 2 silencers, in rest position closed, with auxiliary manual operation.

Spool valve, housing of aluminum, rubber seals, electrical connection form C according to ISO 15217, with connection socket for 4 mm measuring cable, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/2WV G1/8 EL.IMP. SI

Data:

Dimensions (LxWxH)	mm	187x82x41
Weight	kg	0,431
Mounting type		Snap-in
For exercises according to		BiBB
Industry type / Industry information:		
WV02 series	Mat. no.:	0820038602
BRP catalog: R499 050 203 / 2005-02; page: 6.36		
Activation type		electrically
Nominal flow	l/min	500
Operating pressure	(min/max) bar	1,5 / 10
Operating voltage	(DC) V	24
Current consumption	mA	90
Connection thread		G1/8



5/3-way solenoid valve G1/8 mid. pos. closed; SI

Material no. **1827003415**

Technical description

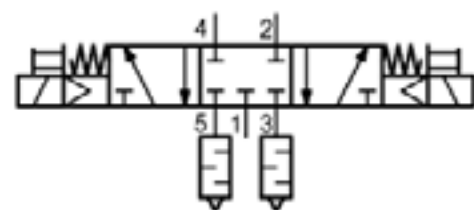
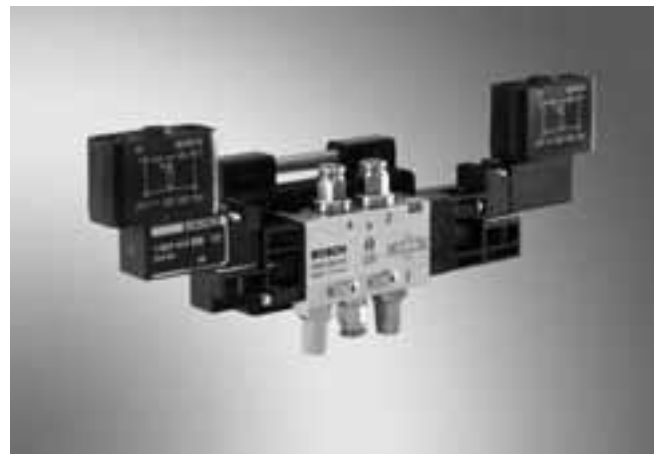
5/3-way control valve, electrically operated on both sides, 5 connections, 3 spool positions, 2 silencers, middle position in all connections closed, with auxiliary manual operation.

Spool valve, housing of aluminum, rubber seals, electrical connection form C according to ISO 15217, with connection socket for 4 mm measuring cable, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/3WV G1/8 EL.SPERR-0 SI

Data:

Dimensions (LxWxH)	mm	200x80x50
Weight	kg	0,423
Mounting type		Snap-in
For exercises according to		BiBB
Industry type / Industry information:		
WV02 series	Mat. no.:	0820039016
BRP catalog: R499 050 203 / 2005-02; page: 6.42		
Activation type		electrically
Nominal flow	l/min	400
Operating pressure	(min/max) bar	2,2 / 10
Operating voltage	(DC) V	24
Current consumption	mA	90
Connection thread		G1/8



Pneumatic components

4.2 Valves / Electrical directional valves

5/2-way solenoid valve G1/8; PAL; SIMaterial no. **1827003555****Technical description**

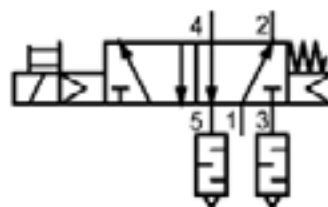
5/2-way control valve, electrically operated with spring return, 5 connections, 2 spool positions, 2 silencers, in rest position closed, with auxiliary manual operation.

Spool valve, housing of aluminum, rubber seals, electrical connection form C according to ISO 15217, electrical connection socket with molded cables, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/2 WEGEVENTIL G1/8,EL.UMSCH. PAL,SI

Data:

Dimensions (LxWxH)	mm	160x140x50
Weight	kg	0,431
Mounting type	Snap-in	
For exercises according to	PAL	
Industry type / Industry information:		
WV02 series	Mat. no.:	0820038102
BRP catalog: R499 050 203 / 2005-02; page: 6.36		
Activation type	electrically	
Nominal flow	l/min	500
Operating pressure	(min/max) bar	2 / 10
Operating voltage	(DC) V	24
Current consumption	mA	90
Connection thread	G1/8	

**5/2-way pulse solenoid valve G1/8; PAL; SI**Material no. **1827003556****Technical description**

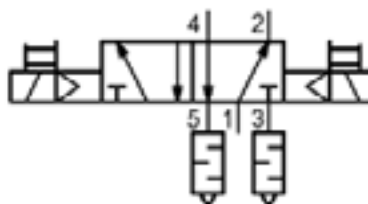
5/2-way control valve, electrically operated on both sides, 5 connections, 2 spool positions, 2 silencers, in rest position closed, with auxiliary manual operation.

Spool valve, housing of aluminum, rubber seals, electrical connection form C according to ISO 15217, electrical connection socket with molded cables, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

5/2 WEGEVENTIL G1/8,EL.IMPULS PAL,SI

Data:

Dimensions (LxWxH)	mm	300x180x70
Weight	kg	0,668
For exercises according to	PAL	
Industry type / Industry information:		
WV02 series	Mat. no.:	0820038602
BRP catalog: R499 050 203 / 2005-02; page: 6.36		
Activation type		electrically
Nominal flow	l/min	500
Operating pressure	(min/max) bar	1,5 / 10
Operating voltage	(DC) V	24
Current consumption	mA	90
Connection thread		G1/8



4.2 Valves / Flow control valves

Throttle check valve G1/8; d=1 mm; SI

Material no. **1827003379**

Technical description

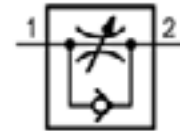
Throttle check valve, manually operated, 2 connections, throttled in one direction (from 1 to 2) - free flow in the opposite direction, manual throttle setting by means of lockable knurled screw.

Taper throttle and membrane check valve, housing of aluminum, elastic seal, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

DRV G1/8 D=1MM SI

Data:

Dimensions (LxWxH)	mm	70x80x48
Weight	kg	0,16
Mounting type	Snap-in	
Used in exercises according to	BiBB	
Industry type / Industry information:		
Mat. no.:	0821200009	
Industry type / Industry information:		
BRP catalog: R499 050 203 / 2005-02; page: 9.33		
Nominal flow	l/min	135
Operating pressure	bar	10
Activation type	manually	
Connection thread	G1/8	



Throttle check valve G1/8 for distributor ring

Material no. **0821200212**

Technical description

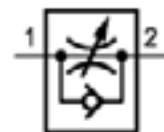
Throttle check valve for installation, in taper throttle design, flow throttled in one direction (from 1 to 2), in the opposite direction (from 2 to 1) free flow, throttle effect can be set using a knurled screw.

Brass nickel-plated, valve for the installation into the distributor ring with plug-in connection
mat. no. 1823391585, seal to the distributor ring by means of two plastic seals.

DROSSELRUECKSCHLVT

Data:

Dimensions (LxWxH)	mm	42x15x15
Weight	kg	0,03
Mounting type	screwed	
Industry type / Industry information:		
	Mat. no.:	0821200212
BRP catalog: R499 050 203 / 2005-02; page: 9.31		
Operating pressure	bar	10
Opening pressure	bar	> 0,5
Connection thread	G1/8	



Pneumatic components

4.2 Valves / Logic valves

OR 3-fold; SIMaterial no. **1827003147****Technical description**

Logic valve 3-fold, internally controlled, 9 connections 3 per logic unit, pressure at actuator port A is applied if there is supply pressure either at connection E1 or E2.

Seat valve, housing of aluminum, elastic Perbunan seal, 3-fold independent functional OR units, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

WECHSELVENTIL ODER, 3-FACH, SI

Data:

Dimensions (LxWxH)	mm	110x70x60
Weight	kg	0,278
Mounting type	Snap-in	
For exercises according to	BR	

Industry type / Industry information:

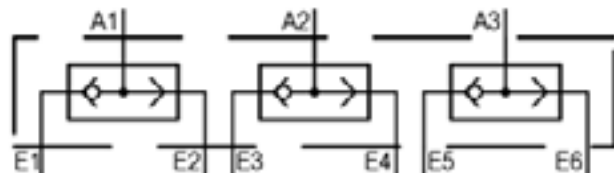
Mat. no.: 0821000008

RB catalog 1987 765 015 / 98.02; page: 11.8

Activation type	internally controlled	pneumatically
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Nominal flow	l/min	90
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Operating pressure	(min/max) bar	1 / 10
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**AND 3-fold; SI**Material no. **1827003148****Technical description**

Logic valve 3-fold, internally controlled, 9 connections 3 per logic unit, pressure at actuator port A is applied if there is identical pressure at the connections E1 and E2.

Seat valve, housing of aluminum, elastic Perbunan seal, 3-fold independent functional AND units, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

WECHSELVENTIL UND, 3-FACH, SI

Data:

Dimensions (LxWxH)	mm	110x70x60
Weight	kg	0,276
Mounting type	Snap-in	
For exercises according to	BR	

Industry type / Industry information:

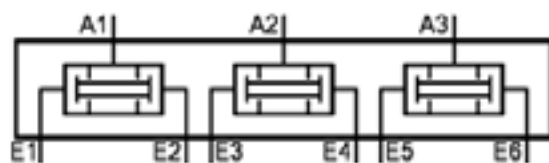
Mat. no.: 0821001008

RB catalog 1987 765 015 / 98.02; page: 11.7

Activation type	internally controlled	pneumatically
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Nominal flow	l/min	90
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Operating pressure	(min/max) bar	1 / 10
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4.2 Valves / Logic valves

OR G1/8 1-fold; SI

Material no. **1827003382**

Technical description

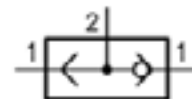
Logic valve 1-fold, internally controlled, 3 connections, pressure at actuator port 2 is applied if there is supply pressure at one of the two inputs.

Seat valve, housing of aluminum, elastic Perbunan seal, connections with Ø 4 mm plug-in connection, with mounting system for grooved plate.

WECHSELVENTIL ODER G1/8 1-FACH, SI

Data:

Dimensions (LxWxH)	mm	82x62x48
Weight	kg	0,156
Mounting type		Snap-in
For exercises according to		BiBB, PAL
Industry type / Industry information:		
	Mat. no.:	0821000002
RB catalog 1987 765 015 / 98.02; page: 11.19		
Activation type	internally controlled	pneumatically
Nominal flow	l/min	640
Operating pressure	(min/max) bar	1 / 10
Connection thread		G1/8



AND M5 1-fold, SI

Material no. **1827003383**

Technical description

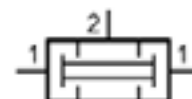
Logic valve 1-fold, internally controlled, 3 connections, pressure at actuator port 2 is applied if there is identical pressure at the two inputs 1.

Seat valve, housing of plastic, seal of NBR, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

WECHSELVENTIL UND M5 1-FACH, SI

Data:

Dimensions (LxWxH)	mm	70x65x50
Weight	kg	0,13
Mounting type		Snap-in
For exercises according to		BiBB, PAL
Industry type / Industry information:		
	Mat. no.:	0821001004
RB catalog 1987 765 015 / 98.02; page: 11.24		
Activation type	internally controlled	pneumatically
Nominal flow	l/min	80
Operating pressure	(min/max) bar	0,1 / 10
Connection thread		M5



Pneumatic components

4.2 Valves / Valve terminal

Valve block 02; 8 positions; SI

Material no. **1827003244**

Technical description

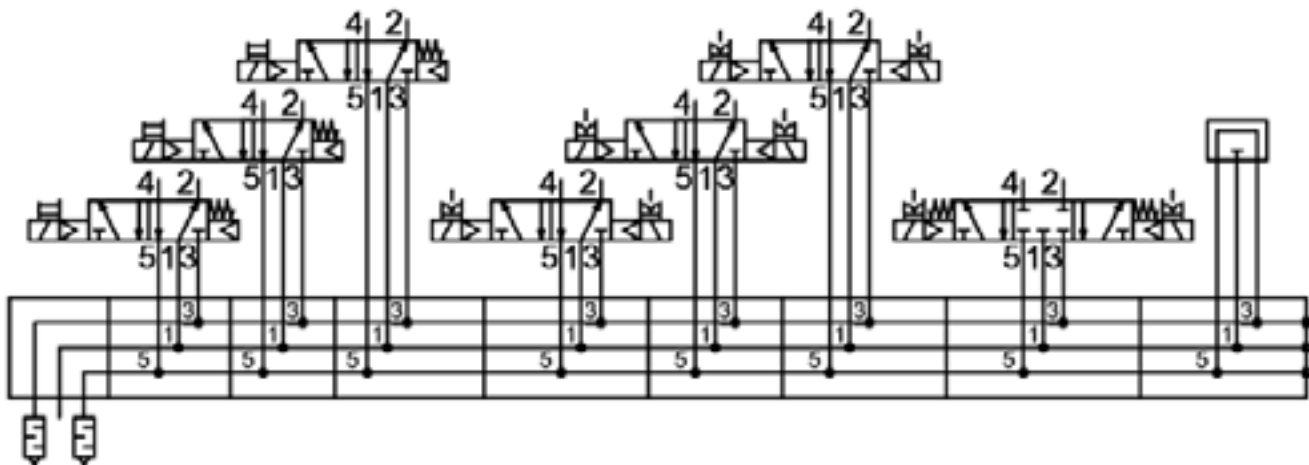
The valve terminal is equipped with 7 valves: 3 5/2-way control valves with spring return, monostable, 3 5/2-way control valves pulse valve bistable, 1 5/3-way control valve middle position closed. Electrical supply and signals combined on one plug, central compressed air connection, joint exhaust air connection with silencer.

Housing and valve support of aluminum, blade terminal connection upwards, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

VENTILBLOCK 02, 8 PLAETZE, SI

Data:

Dimensions (LxWxH)	mm	260x160x118
Weight	kg	2,772
Mounting type	Snap-in	
For exercises according to	BR	
Industry type / Industry information:		
VTS02 series	Mat. no.:	0821706113
RB catalog 1987 765 015 / 98.02; page:11.40		
Activation type	electrically	
Nominal flow	l/min	500
Operating pressure	(max) bar	10
Operating voltage	(DC) V	24
Power consumption per spool	mA	50
Connection thread	Supply air, exhaust air	G1/8
Connection thread	Work	M5
Type of protection	IEC 60529	IP 65



4.2 Valves / Valve terminal

Connection cable for VTS/VTS02

Material no. **1827003242**

Technical description

Connection cable to the valve terminal of the VTS series for supply voltage and signals.

Connection cable from 26-pin D-SUB socket to 48-pin blade terminal

ANSCHLUSSKABEL VTS/VTS02

Dimensions (LxWxH)	mm	150x130x40
Weight	kg	0,146
Mounting type	screwed	
For exercises according to	BR	
Length	m	0,5
Current max. / pin	A	1
Type of protection	IEC 60529	IP 50



VTS connecting box; 24V; 2A; 16-fold; TSI

Material no. **1827003596**

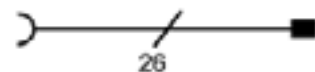
Technical description

Adapter for signal transmission to VTS valve terminal, designation of the test sockets according to the connections of the solenoid valves at the VTS, adapter for 16 signals, with D-SUB plug to test sockets, 2 test sockets for supply voltage 24V and 0V connected with D-SUB plug, allocation of the plug-pin assignment to test sockets according to plan.

Plastic housing with aluminum front panel, with 4 mm test sockets, designed as slide-in module with printed circuit board, with mounting system for grooved plate or electrical attachment.

ANSCHLUSSBOX VTS 24V, 2A, 16 FACH, TSI

Dimensions (LxWxH)	mm	150x85x75
Weight	kg	0,39
Mounting type	Tandem snap-in	
For exercises according to	BR	
Operating voltage	(DC) V	24
Current max. / pin	A	2
Type of protection	IEC 60529	IP 50
Recommended accessories	Pcs	Mat. no.
VTS connection cable	1	1827003242



Pneumatic components

4.3 Special components / Maintenance units

Filter regulator G1/8; 0.1-1 bar; SIMaterial no. **1827003387****Technical description**

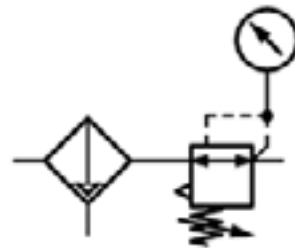
Pressure regulator valve, 2 connections, 1 free hole, with pressure gauge, with hand wheel and pressure regulation, feeding pressure is regulated to secondary pressure.

Membrane pressure controller, housing of zinc, pressure gauge, hand wheel for setting the secondary pressure, filter unit flanged to the pressure regulator valve, vertical installation position, microfilter, exchangeable filter insert: Borosilicate glass fibre, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

FILTERREGLER G1/8, 0,1-1 BAR,SI

Data:

Dimensions (LxWxH)	mm	170x160x158
Weight	kg	0,854
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
NL1 series	Mat. no.:	0821302728
BRP catalog R499 050 203 / 2005-02; page: 11.76		
Nominal flow	l/min	600
Operating pressure	(max) bar	16
Secondary pressure range	(min/max) bar	0,1 - 1
Activation type	manually	

**Filter regulator 3/2-way valve; 0.2-8 bar; SI**Material no. **1827003410****Technical description**

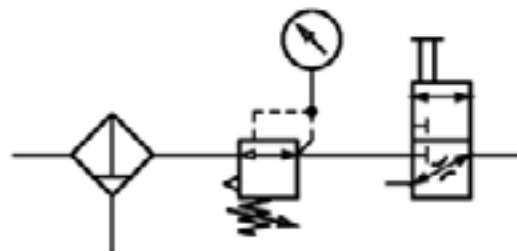
Pressure controller with 3/2-way control valve, manually operated, filter with downstream pressure regulator valve for reduced compressed air supply, with pressure gauge, with shut-off valve, 2 connections, 1 free hole.

Membrane pressure controller with secondary venting, lockable spherical shut-off valve, housing of zinc die casting, hand wheel for setting the secondary pressure, vertical installation position, filter insert: Polyethylene, exchangeable, condensate drain semi-automatic, open at zero pressure, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

FILTERREGLER 3/2-WEGEVENTIL, 0,2 - 8 BA

Data:

Dimensions (LxWxH)	mm	163x160x142
Weight	kg	0,934
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
NL1 series	Mat. no.:	0821300750 0821300772
BRP catalog R499 050 203 / 2005-02; page: 11.214		
Nominal flow	l/min	950
Operating pressure	(min/max) bar	0,5 / 16
Secondary pressure range	(min/max) bar	0,2 - 8
Activation type	via hand wheel	manually
Filter mesh	µm	5



4.3 Special components / Pressure controller

Pressure regulator G1/8; 0.5-10 bar; SI

Material no. **1827003386**

Technical description

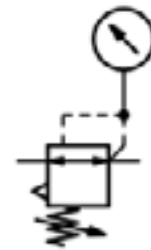
Pressure controller with pressure gauge, 2 connections, 1 free hole, secondary pressure manually adjustable, feeding pressure is regulated to secondary pressure.

Membrane pressure controller with relief port, housing of zinc, hand wheel for setting the secondary pressure, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

DRUCKREGLER G1/8,0,5-10 BAR, SL

Data:

Dimensions (LxWxH)	mm	100x80x70
Weight	kg	0,42
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
NL1 series	Mat. no.:	0821302730
BRP catalog R499 050 203 / 2005-02; page: 11.76		
Nominal flow	l/min	600
Operating pressure	(max) bar	16 bar
Secondary pressure range	(min/max) bar	0,5 - 10



Pneumatic components

4.3 Special components / Pressure gauges

Manometer 0-10 bar, SIMaterial no. **1827003406****Technical description**

Pressure gauge, analog pointer instrument, 2 connections.
Bourdon tube pressure gauge, temporarily loadable to the maximum display range, terminal block of aluminum, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

MANOMETER 0-10 BAR, SI

Data:

Dimensions (LxWxH)	mm	88x70x50
Weight	kg	0,222
Mounting type	Snap-in	
For exercises according to	BiBB	

Industry type / Industry information:

Mat. no.: 1827231024

BRP catalog R499 050 203 / 2005-02; page: 11.306

Operating pressure (max) bar 6

Display range / scale (min/max) bar 0 – 10 / 0,5

**Manometer 0-2.5 bar, SI**Material no. **1827003407****Technical description**

Pressure gauge, analog pointer instrument, 2 connections.
Bourdon tube pressure gauge, temporarily loadable to the scale value, connection thread on the backside, housing of plastic, installed on aluminum block with 2 parallel Ø 4 mm plug-in connections, with mounting system for grooved plate.

MANOMETER 0-2,5 BAR, SI

Data:

Dimensions (LxWxH)	mm	88x70x50
Weight	kg	0,222
Mounting type	Snap-in	
For exercises according to	BiBB	

Industry type / Industry information:

Mat. no.: 1827231048

BRP catalog R499 050 203 / 2005-02; page: 11.306

Connection thread G1/8

Display range / scale bar 0-2,5 / 0,1

Pressure application area bar 0 – 1,7



4.3 Special components / Pressure gauges

Manometer -1/0 bar, SI

Material no. **1827003408**

Technical description

Pressure gauge for vacuum display, analog pointer instrument, 2 connections.

Bourdon tube pressure gauge, temporarily loadable to the display value, connection thread on the backside, housing of plastic, installed on aluminum block with 2 parallel Ø 4 mm plug-in connections, with mounting system for grooved plate.

MANOMETER -1/0 BAR SI

Data:

Dimensions (LxWxH)	mm	90x70x50
Weight	kg	0,198
Mounting type	Snap-in	

Industry type / Industry information:

Mat. no.: 1827231053

BRP catalog R499 050 203 / 2005-02; page: 11.306

Connection thread	G1/8	
Display range / scale	bar	-1...0 / 0,1
Pressure application area	bar	-0,8...0



PN pressure display d=4 mm red

Material no. **1823391136**

Technical description

Pressure display pneumatic-mechanical, a pressure-sensitive plug insert with view button, the height of the extended view button is a measure for the applied pressure, used as control display in maintenance and troubleshooting.

Plug insert (connection piece) of brass nickel-plated, view button aluminum anodized.

Inserted into the pressure display with plug-in connection ready for connection - Mat. no.: 1827003409.

DRUCK-UNTERDRUCK-T 10PACK

Data:

Dimensions (LxWxH)	mm	Ø12x39
Weight	kg	0,004
Mounting type	plugged in	
For exercises according to	BIBB, PAL, BR	

Industry type / Industry information:

Mat. no.: 1823391136

RB catalog 1987 765 015 / 98.02; page: 10.115

Operating pressure	(max) bar	10
Response pressure	bar	1,2
Connection piece	mm	Ø 4
Delivery quantity	Piece(s)	10



Material no. **1827003409**

Pressure display pneumatic-mechanical, 2 connections, 1 signal encoder, pressure display through pressure-sensitive plug insert with view button that extends against measuring spring force proportionate to the applied air pressure.

PN-DRUCKANZEIGE, SI

Connection thread	G1/8
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4.3 Special components / P/E converter

Pneumatical pressure switch 1–16 bar, SI

Material no. **1827003428**

Technical description

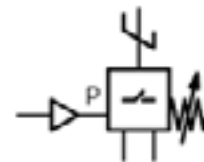
pneumatic / electrical pressure switch, manually adjustable, with spring preload, changeover contact. Used for the pressure-dependent generation of an electrical switching signal.

Membrane with spring preload, with socket, form A, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

DRUCKSCHALTER 1,0-16 BAR, SI

Data:

Dimensions (LxWxH)	mm	110x105x50
Weight	kg	0,348
Mounting type	Snap-in	
For exercises according to	BiBB, BR	
Industry type / Industry information:		
	Mat. no.:	0821100013
BRP catalog R499 050 203 / 2005-02; page: 11.274		
Operating pressure	(min/max) bar	0,5 / 16
Switching capacity	DC 24V	10 A
Switching capacity	AC 220V	7 A
Type of protection	IEC 60529	IP 65
Setting range	bar	1 - 16
Connection thread	G1/4	
Activation type	pneumatically	



P/E converter -1 to 0 bar; SI

Material no. **1827003434**

Technical description

Pneumatically operated electrical switch, 3-pin; with an increasing pilot pressure, the micro-switch switches from contact 1-2 to contact 1-3 (changeover).

Membrane with spring preload, with socket, form A, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

P/E WANDLER -1 BIS 0 BAR, SI

Data:

Dimensions (LxWxH)	mm	110x105x50
Weight	kg	0,356
Mounting type	Snap-in	
Industry type / Industry information:		
PM1 series	Mat. no.:	0821100010
BRP catalog R499 050 203 / 2005-02; page: 11.274		
Operating pressure	(min/max) bar	-0,9 to 0
Switching capacity	DC 24 V	10 A
Switching capacity	AC 220 V	7 A
Type of protection	IP 65	
Switching accuracy	(in center) %	± 3
Activation type		pneumatically



Pneumatic components

4.3 Special components / Reflex nozzle

Reflex nozzle d=3 mmMaterial no. **1827003403****Technical description**

Reflex nozzle, measuring nozzle with pneumatic signal recording of the back pressure, 1 pressure connection, 1 measuring connection and measuring nozzle, positive signal at the measuring connection in case of distance recording of a solid body. For the contactless recording of moveable parts, e.g. tubular bags in packing machines. For reducing the pressure at the input, upstream connection of a pressure regulator (-0.1 to 1 bar) is necessary, mat. no. 1827003410. For the further processing of the measurement signal, the downstream connection of a directional valve with pressure amplifier is necessary, mat. no. 1827003389.

Housing and internal part of brass, mounted at aluminum angle in an adjustable way, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

REFLEXDUESE D = 3 MM, SI

Data:

Dimensions (LxWxH)	mm	71x57x63
Weight	kg	0,156
Mounting type	Snap-in	
Used in exercises	BiBB	
Industry type / Industry information:		
	Mat. no.:	1827020028
RB catalog: 1987 765 015 / 98.02; page: 3.63 + 3.64		
Operating pressure	(min/max) bar	0,1 / 0,4
Air consumption at 0,4 bar	l/min	20
Activation type	pneumatically	
Signal pressure, 2 mm	(distance) mbar	28
Exhaust hole	Ø mm	3



4.3 Special components / Suction nozzle

Vacuum ejector, SI

Material no. **1827003225**

Technical description

Suction nozzle, 3 connections, vacuum is produced by compressed air flow from 1 through venturi injectors to 2. Vacuum results at the smallest nozzle cross-section at connection 2 leading to the suction cup, for gripping laminar material with smooth surface.

Aluminum housing, black anodized, nozzle system of brass, flat suction cup, Perbunan material with internal thread, with Ø 4 mm plug-in connection, with mounting system for grooved plate.

VAKUUM-EJEKTOR, SI

Data:

Dimensions (LxWxH)	mm	110x100x50
Weight	kg	0,212
Mounting type	Snap-in	
Industry type / Industry information:		
Ejector	Mat. no.:	0821305003
Flat suction cup		1820455077
RB catalog 1987 765 015 / 98.02; page: 7.11 + 7.21		
Pressure range	(max) bar	7
Air consumption	l/min	20
Pump-down time	s	9
Holding force, 60% vacuum	N	321
Activation type	pneumatically	



Pneumatic components

4.3 Special components / Counter

PN summation counter 6 digits; SIMaterial no. **1827003404****Technical description**

Pneumatic-mechanical summation counter, 2 connections, counting frequency depends on the pressure and the pipe length (values have to be determined) / reset: manually via manual button or pneumatically > 2 bar / counting: processes that are expressed by pneumatic pulses.

Plastic housing, white numbers, 6-digit display, arbitrary installation position, with $\varnothing 4$ mm plug-in connection, with mounting system for grooved plate.

PN-SUMMENZAEHLER 6-STELLIG, SI

Data:

Dimensions (LxHxW)	mm	115x70x58
Weight	kg	0,222
Mounting type	Snap-in	

Industry type / Industry information:

Mat. no.: 0821304018

RB catalog 1987 765 015 / 98.02; page: 7.75

Test counting frequency Hz 25

Pulse duration (counting/resetting) ms $> (18 / 180)$ Break duration (counting/resetting) ms $> (10 / 50)$

Connection thread M5

**PN counter timer box 8 bar 6-digit; TSI**Material no. **1827003593****Technical description**

Preset summation counter for pneumatic pulses, 4 connections, reset button, preset pushbutton, preset and actual display 3-digit. If the preselected target pulse number corresponds with the pneumatically generated actual pulse number, the integrated 3/2-way pulse valve will switch, reset manually or pneumatically.

Plastic housing with aluminum front panel, 4 with $\varnothing 4$ mm plug-in connection, with mounting system for grooved plate or electrical attachment.

PN.VORWAHLZAEHLERBOX 8 BAR 6STELLIG,TSI

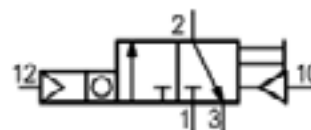
Data:

Dimensions (LxWxH)	mm	140x125x90
Weight	kg	0,642
Mounting type	Tandem snap-in	

For exercises according to BiBB, BR

Operating pressure bar 2 - 8

Pilot pressure Pulse bar 0,8 - 1,5



4.3 Special components / Distributor

PN distributor 6-fold, SI

Material no. **1827003411**

Technical description

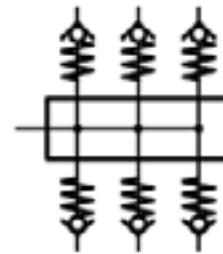
Pneumatic distributor 6-fold, 6 consumer connections, 1 connection as inlet, flow release in outflow direction after insertion of the plastic tube.

Housing of anodized aluminum, connection for inlet with Ø 6 mm plug-in connection, connections for each outflow with Ø 4 mm plug-in connection closing in outflow direction, with mounting system for grooved plate or electrical attachment.

PN-VERTEILER 6-FACH, SI

Data:

Dimensions (LxWxH)	mm	75x71x54
Weight	kg	0,224
Mounting type	Snap-in	
For exercises according to	BiBB	
Industry type / Industry information:		
	Mat. no.:	1823390045
BRP catalog R499 050 203 / 2005-02; page: 12.137		
Operating pressure	(max) bar	16
Nominal flow Inlet	l/min	530
Nominal flow per outflow	l/min	190
Connection thread	per outflow	M5
Connection thread	Inlet	G1/8



PN distributor with 3/2-way cont. valve; PAL; SI

Material no. **1827003577**

Technical description

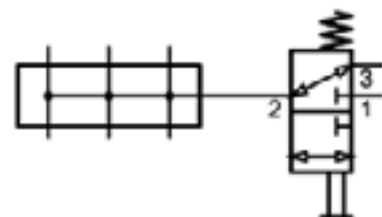
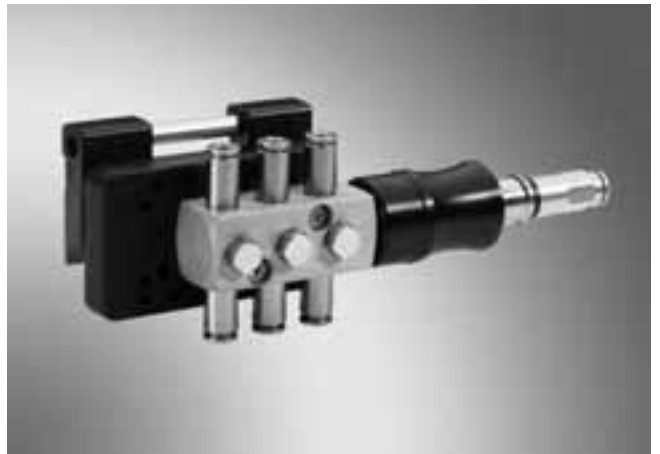
Pneumatic distributor 6-fold, 6 connections as outflows, 1 connection as inlet, 3/2-way manual slide valve with detent and 1 free hole, spool position 1: inlet closed, spool position 2: inlet open, free hole closed.

Housing of anodized aluminum, connection for inlet with Ø 6 mm plug-in connection, connection for outflow with Ø 4 mm plug-in connection, with mounting system for grooved plate.

PN-VERTEILER M. 3/2 WV PAL, SI

Data:

Dimensions (LxWxH)	mm	160x55x52
Weight	kg	0,282
Mounting type	Snap-in	
For exercises according to	PAL	
Operating pressure	(min/max) bar	-0,95 / 16
Nominal flow Inlet	l/min	530
Nominal flow per outflow	l/min	190
Connection thread	per outflow	M5
Connection thread	Inlet	G1/8



Pneumatic components

4.3 Special components / Tube support

5-fold clamping strip PAL; snap-inMaterial no. **1827003574****Technical description**

5-fold clamping strip for attaching tubes

Clamping strip of plastic, with mounting system for grooved plate.

KLEMMLEISTE 5-FACH PAL, SNAP-IN

Data:

Dimensions (LxWxH)	mm	73x53x42
Weight	kg	0,098
Mounting type	Snap-in	
For exercises according to	PAL	

**5-fold clamping strip with PAL ID plate**Material no. **1827003553****Technical description**

5-fold clamping strip for attaching tubes, with ID plate.

Clamping strip of plastic, ID plate of aluminum, with mounting system for grooved plate.

KLEMMLEISTE 5-FACH MIT KENNZEICHNUNGSSCH

Data:

Dimensions (LxWxH)	mm	90x50x40
Weight	kg	0,116
Mounting type	Snap-in	
For exercises according to	PAL	



5 Electrical components

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Electrical components

5.1 Operating modules in plastic box

Relay box 24V; 2A; 4 change-over controls; TSIMaterial no. **1827003583****Technical description**

Relay with 4 changeover contacts, direct switching, control lamp is illuminated in the switched condition.

Plastic housing with aluminum front panel, contact-protected 4 mm test sockets, relay and control circuit designed as slide-in module with printed circuit board, with mounting system for grooved plate or for electrical attachment.

RELAISBOX 24V,4A,4 WECHSLER,TSI“

Data:

Dimensions (LxWxH)	mm	150x85x75
Weight	kg	0,386
Mounting type	Tandem snap-in	
For exercises according to	BiBB, BR	
Operating voltage	(DC) V	24
Current consumption Relay	mA	60
Switching current with DC 24V	A	4
Type of protection	IEC 60529	IP 50

**Relay box,24V; 2A; pick-up delay; TSI**Material no. **1827003584****Technical description**

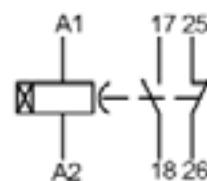
Relay with 1 normally open contact and 1 normally closed contact, switching with pick-up delay, continuously adjustable time delay, control lamp is illuminated in the switched condition.

Plastic housing with aluminum front panel, contact-protected 4 mm test sockets, relay and control circuit designed as slide-in module with printed circuit board, with mounting system for grooved plate or for electrical attachment.

RELAISBOX 24V,4A,ANZUGVERZOEGERUNG,TSI“

Data:

Dimensions (LxWxH)	mm	150x90x85
Weight	kg	0,354
Mounting type	Tandem snap-in	
For exercises according to	BiBB, BR	
Operating voltage	(DC) V	24
Current consumption Relay	mA	80
Switching current with DC 24V	A	4
Setting range	s	0,5 to 15
Type of protection	IEC 60529	IP 50



5.1 Operating modules in plastic box

Relay box 24V; 2A; release time delay; TSI

Material no. **1827003585**

Technical description

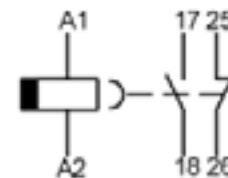
Relay with 1 normally open contact and 1 normally closed contact, switching with dropout delay, continuously adjustable time delay, control lamp is illuminated in the switched condition.

Plastic housing with aluminum front panel, contact-protected 4 mm test sockets, relay and control circuit designed as slide-in module with printed circuit board, with mounting system for grooved plate or for electrical attachment.

RELAISBOX 24V,4A,RUECKFALLVERZOEGERUNG,TS

Data:

Dimensions (LxWxH)	mm	150x90x85
Weight	kg	0,348
Mounting type	Tandem snap-in	
For exercises according to	BiBB, BR	
Operating voltage	(DC) V	24
Current consumption Relay	mA	80
Switching current with DC 24V	A	4
Setting range	s	0,5 to 15
Type of protection	IEC 60529	IP 50



Display box 24V; optical/acoustic; TSI

Material no. **1827003586**

Technical description

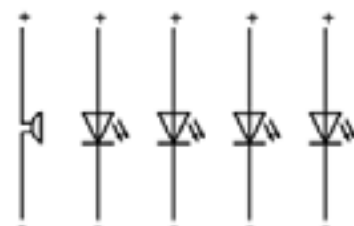
Optical and acoustic signal display, optical display 4 x LED red, acoustic display with buzzer, displays are active if there is voltage at the socket pair (+, -).

Plastic housing with aluminum front panel, contact-protected 4 mm test sockets (4 x 2 for optical, 1 x 2 for acoustic display), designed as slide-in module on printed circuit board, with mounting system for grooved plate or for electrical attachment.

ANZEIGEBOX 24V,OPT./AKUSTISCH,TSI

Data:

Dimensions (LxWxH)	mm	150x85x80
Weight	kg	0,346
Mounting type	Tandem snap-in	
For exercises according to	BiBB, BR	
Operating voltage	(DC) V	24
Current consumption LED	mA	20
Current consumption Buzzer	mA	10
Type of protection	IEC 60529	IP 50



Electrical components

5.1 Operating modules in plastic box

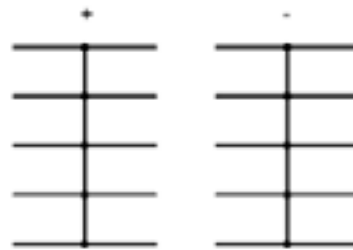
Distributor box 24V; 2A; 10+/10- sockets; TSIMaterial no. **1827003587****Technical description**

Distributor box for 24V and 0V, 10 sockets (red for 24V) are electrically connected, 10 sockets (blue for 0V) likewise. Plastic housing with aluminum front panel, with 10 red and 10 blue 4 mm test sockets, designed as slide-in module on printed circuit board, with mounting system for grooved plate or for electrical attachment.

VERTEILERBOX 24V,4A,10+/10-BUCHSEN,TSI

Data:

Dimensions (LxWxH)	mm	150x85x80
Weight	kg	0,366
Mounting type	Tandem snap-in	
For exercises according to	BiBB, BR	
Operating voltage	(DC) V	24
Contact load, max	A	4
Sockets, red (+)	Piece(s)	10
Sockets, blue (-)	Piece(s)	10
Type of protection	IEC 60529	IP 50

**1 switch/2 buttons box 24V; 2A; TSI**Material no. **1827003588****Technical description**

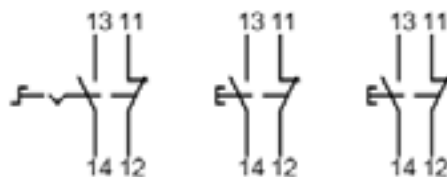
Switch and button box, 1 switch with 2 detents, 1 normally closed contact, 1 normally open contact, operation by turning the switch toggle, 2 buttons with spring return, in each case 1 normally closed contact and 1 normally open contact, operation by jogging the button.

Plastic housing with aluminum front panel, contact-protected 4 mm test sockets, designed as slide-in module with printed circuit board, with mounting system for grooved plate or for electrical attachment.

1SCHALTER/2TASTERBOX 24V,4A,TSI

Data:

Dimensions (LxWxH)	mm	150x85x85
Weight	kg	0,372
Mounting type	Tandem snap-in	
For exercises according to	BiBB, BR	
Operating voltage	(DC) V	24
Contact load	A	4
Type of protection	IEC 60529	IP 50



5.1 Operating modules in plastic box

Switch box 2x 24V; 2A; LED; TSI

Material no. **1827003589**

Technical description

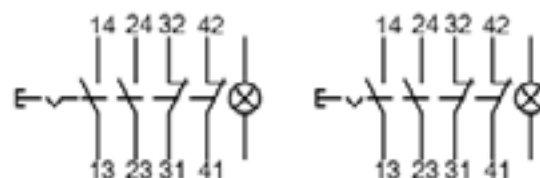
Switch box with 2 pushbuttons, in each case 2 normally open contacts and 2 normally closed contacts, switch with signal lamp, separately operatable via 2 test sockets.

Plastic housing with aluminum front panel, with 2 pushbuttons, with 16 connection sockets to the switching contacts, 4 connection sockets to the signal lamps, designed as slide-in module on printed circuit board, with mounting system for grooved plate or for electrical attachment.

SCHALTERBOX 2FACH 24V,4A,LED,TSI

Data:

Dimensions (LxWxH)	mm	150x85x85
Weight	kg	0,382
Mounting type	Tandem snap-in	
For exercises according to	BiBB, BR	
Operating voltage	(DC) V	24
Contact load	A	4
Power Signal lamp	mA	20
Type of protection	IEC 60529	IP 50



Button box 2x 24V;2A;LED;TSI

Material no. **1827003590**

Technical description

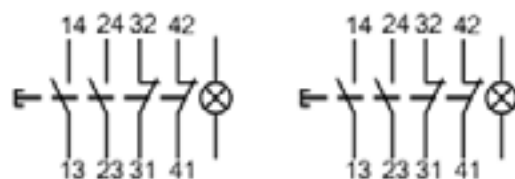
Button box with 2 pushbuttons, in each case 2 normally open contacts and 2 normally closed contacts, button with signal lamp, separately operatable via 2 test sockets.

Plastic housing with aluminum front panel, with 2 pushbuttons, with 16 connection sockets to the switching contacts, 4 connection sockets to the signal lamps, designed as slide-in module on printed circuit board, with mounting system for grooved plate or for electrical attachment.

TASTERBOX 2FACH 24V,4A,LED,TSI

Data:

Dimensions (LxWxH)	mm	150x85x85
Weight	kg	0,382
Mounting type	Tandem snap-in	
For exercises according to	BiBB, BR	
Operating voltage	(DC) V	24
Contact load	A	4
Power Signal lamp	mA	20
Type of protection	IEC 60529	IP 50



Electrical components

5.1 Operating modules in plastic box

Switch box emergency off 24V; 2A; TSIMaterial no. **1827003591****Technical description**

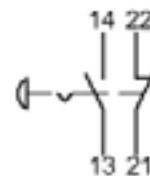
Switch for emergency off, mechanical locking in switched position, mechanical unlocking by turning the control button, 1 normally open contact, 1 normally closed contact.

Plastic housing with aluminum front panel, contact-protected 4 mm test sockets, designed as slide-in module, with mounting system for grooved plate or for electrical attachment.

SCHALTERBOX NOT-AUS 24V,4A,TSI

Data:

Dimensions (LxWxH)	mm	150x110x85
Weight	kg	0,324
Mounting type	Tandem snap-in	
For exercises according to	BiBB, BR	
Operating voltage	(DC) V	24
Contact load	A	4
Type of protection	IEC 60529	IP 50

**Counter timer box 24V; 2A; 3-digit; TSI**Material no. **1827003592****Technical description**

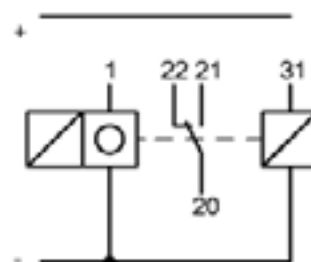
Counter timer box with potential-free changeover contact, when reaching the counter value, the contact switches, reset of the counter reading by reset pulse or manually using the button, setting the counter value by 3-digit decade switch.

Plastic housing with aluminum front panel, manual reset button, contact-protected 4 mm test sockets, designed as slide-in module on printed circuit board, with mounting system for grooved plate or for electrical attachment.

VORWAHLZAEHLERBOX 24V,2A 3STELLIG,TSI

Data:

Dimensions (LxWxH)	mm	150x85x75
Weight	kg	0,372
Mounting type	Tandem snap-in	
For exercises according to	BR	
Operating voltage	(DC) V	20 - 26
Current consumption	mA	80
Contact load	A	2
Type of protection	IEC 60529	IP 50



5.1 Operating modules in plastic box

Relay box 24V; 2A; pick-up/release time delay; TSI

Material no. **1827003594**

Technical description

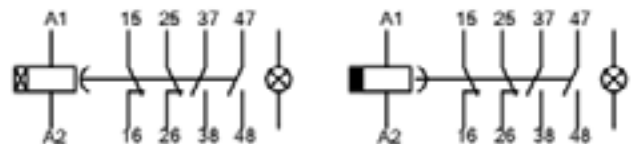
Relay box with pick-up and dropout delayed relay, each relay with 2 normally open contacts and 2 normally closed contacts, time delay continuously and separately adjustable for each relay.

Plastic housing with aluminum front panel, with contact-protected 4 mm test sockets, 2 setting potentiometers for delay time, designed as slide-in module on printed circuit board, with mounting system for grooved plate or for electrical attachment.

RELAISBOX 24V,2A,ANZ./RUECKFALLVERZOEGE

Data:

Dimensions (LxWxH)	mm	150x85x85
Weight	kg	0,418
Mounting type	Tandem snap-in	
For exercises according to	BR	
Supply voltage	(DC) V	24
Contact load	A	2
Current consumption	mA	60, per relay
Delay time	s	0,5 to 15
IEC 60529	IP 50	



Input/output box 24V; 2A; 16-fold; TSI

Material no. **1827003595**

Technical description

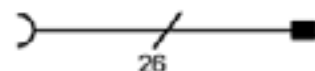
Adapter for 16 signals from D-SUB plug to test sockets, 2 test sockets for supply voltage 24V and 0V connected with D-SUB plug, allocation of the plug-pin assignment to test sockets according to plan.

Plastic housing with aluminum front panel, with contact-protected 4 mm test sockets, 16 x for signals black, 1 x for 24 V red, 1 x for 0 V blue, D-SUB plug 26-pin, designed as slide-in module on printed circuit board, with mounting system for grooved plate or for electrical attachment.

EIN / AUSGANGSBOX 24V,2A,16 FACH,TSI

Data:

Dimensions (LxWxH)	mm	150x85x75
Weight	kg	0,358
Mounting type	Tandem snap-in	
For exercises according to	BR	
Operating voltage	(DC) V	24
Current max. / pin	A	2
Type of protection	IEC 60529	IP 50



Electrical components

5.1 Operating modules in plastic box

Power pack 230V~/24V=; 6,5A

Material no. R961001099

Technical description

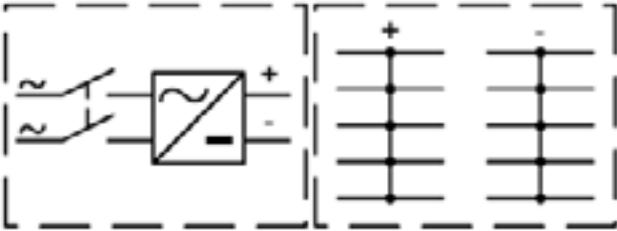

Power supply unit with power switch and operation lamp, contact-protected 4 mm test sockets, 1 unit red for DC 24 V, 1 unit blue for 0 volt.

Distributor plate with contact-protected 4 mm test sockets, 10 units red for DC 24 V and 10 units blue for 0 volt.

Plastic housing with aluminum front panel, with mounting system for grooved plate or for electrical attachment.

NETZTEIL-DS 230V~/6,5A + VERTEILER

Data:		
Dimensions (LxWxH)	mm	280x190x150
Weight	kg	4,05
Mounting type	Tandem snap-in	
For exercises according to	BiBB, PAL, BR	
Input voltage	(AC) V	230
Frequency	Hz	50
Output voltage	(DC) V	24
Output current	(DC) A	6,5
Type of protection	IEC 60529	IP 20



5.2 Position switch

Electrical limit sensor with roller lever; 1 change-over control; 2A

Material no. **1827003421**

Technical description

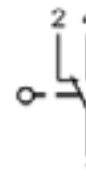
Electrical limit sensor with roller lever, operation via cam.

1 changeover contact, 3 contact-protected 4 mm test sockets, middle contact (1, red), normally closed contact (2, blue), normally open contact (4, black), with mounting system for grooved plate.

GRENZTASTER 2A ELEKTR. TASTROLLE

Data:

Dimensions (LxWxH)	mm	85x75x70
Weight	kg	0,162
Mounting type	Snap-in	
For exercises according to	BiBB	
Operation by means of	roller lever	mechanically
actuation stroke	mm	1,6
Switching current, max.	(DC) A	2
Type of protection	IEC 60529	IP 00



Limit switch with roller PAL; SI

Material no. **1827003569**

Technical description

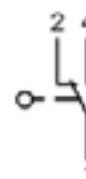
Electrical limit sensor with roller lever, operation via cam.

1 changeover contact, 3 screw terminals, middle contact, normally closed contact, normally open contact, with mounting system for grooved plate.

ENDSCHALTER MIT ROLLE, 24V PAL

Data:

Dimensions (LxWxH)	mm	70x57x57
Weight	kg	0,12
Mounting type	Snap-in	
For exercises according to	PAL	
Operation by means of	roller lever	mechanically
actuation stroke	mm	1,6
Switching current, max.	(DC) A	2
Type of protection	IEC 60529	IP 00



Electrical components

5.2 Position switch

Inductive sensor; 0,2 A; Sn=2 mmMaterial no. **1827003422****Technical description**

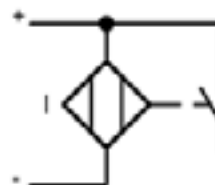
Inductive proximity switch, for the contactless scanning of the piston rod position via metal cam.

Sensor support of aluminum sheet, preset distance for measurement at the piston rod cam, contact-protected 4 mm test sockets, with mounting system for grooved plate.

SENSOR IND. D=12MM BS.SI

Data:

Dimensions (LxWxH)	mm	90x90x70
Weight	kg	0,186
Mounting type	Snap-in	
For exercises according to	BiBB	
Switching gap, max.	mm	2
Switching current, max.	(DC) A	0,2
Diameter	mm	12
Type of protection	IEC 60529	IP 20

**Optical sensor; 0,2 A; Sn=1-200 mm**Material no. **1827003424****Technical description**

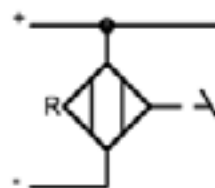
Optical proximity switch, for the contactless scanning of the piston rod position via cam.

Sensor support of aluminum sheet, preset distance for measurement at the piston rod cam, contact-protected 4 mm test sockets, with mounting system for grooved plate.

SENSOR OPT. D=12MM BS.SI

Data:

Dimensions (LxWxH)	mm	90x90x70
Weight	kg	0,186
Mounting type	Snap-in	
For exercises according to	BiBB	
Switching gap	mm	1 - 200
Switching current, max.	(DC) A	0,2
Diameter	mm	12
Type of protection	IEC 60529	IP 20



5.2 Position switch

Capacitive sensor; 0,2A; Sn=1-4 mm

Material no. **1827003423**

Technical description

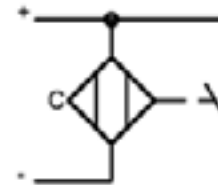
Capacitive proximity switch, for the contactless scanning of the piston rod position via plastic cam.

Sensor support of aluminum sheet, preset distance for measurement at the piston rod cam, contact-protected 4 mm test sockets, with mounting system for grooved plate.

SENSOR KAP. D=12MM BS.SI

Data:

Dimensions (LxWxH)	mm	90x90x70
Weight	kg	0,188
Mounting type	Snap-in	
For exercises according to	BiBB	
Switching gap	mm	1 - 4
Switching current, max.	(DC) A	0,2
Diameter	mm	12
Type of protection	IEC 60529	IP 20



Electrical components

5.3 Relay

Time relay with pickup or dropout delay

Material no. **R961002710**

Technical description
Multifunction time relay, pick-up or dropout delayed operating mode selectable, 2 changeover contacts, 6 modes of operation and 4 time periods manually adjustable, optical display of the set time value.
Plastic housing, pluggable on 11-pin socket, mat. no.: R961002699.

ZEITRELAIS	88.02 11P	&	
Data:			
Dimensions (LxWxH)	mm	95x58x49	
Weight	kg	0,104	
Mounting type	pluggable on socket		
For exercises according to	PAL		
Switching current, max.	(DC) A	8	
Time period 1	0,05s 5h		
Time period 2	0,05s 10h		
Time period 3	0,05s 50h		
Time period 4	0,05s 100h		
Level of protection	IEC 60529	IP 40	

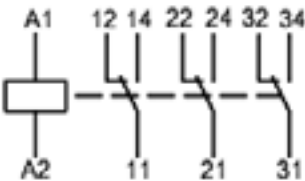


Relay with 3 changeover contacts

Material no. **R961002709**

Technical description
Relay with 3 changeover contacts.
Transparent plastic housing, pluggable on 11-pin socket, mat. no.: R961002699.

STECKRELAIS		6013
Data:		
Dimensions (LxWxH)	mm	68x36x33
Weight	kg	0,082
Mounting type	pluggable on socket	
For exercises according to	PAL	
Switching capacity	DC 24V	10 A
Switching capacity	AC 230V	10 A
Schutzart	IEC 60529	IP 40



5.3 Relay

Relay socket

Material no. **R961002699**

Technical description

Socket for the relay assembly on fastening rail (hat rail), for accepting an 11-pin plug-in relay.

blue plastic housing, with screw terminals.

RELAISFASSUNG 11POL. BLAU 90.21

Data:

Dimensions (LxWxH)	mm	71x38x26
Weight	kg	0,051
Mounting type	snapped onto the rail	
For exercises according to	PAL	
Connection cross-section	mm ²	0,5 - 2,5
Contact load	(AC) A	10
Type of protection	IEC 60529	IP 20



Electrical components

5.4 Operating and display elements

Pilot lamp 24V=, 50 mA		Material no. 1827001988
Technical description Pilot lamp for displaying electric signals. Display opal white, electric connection via clamp terminal, attachment in the carrying angle mat. no.: 1827003558, display unit can be separated from the contact unit. MELDELEUCHTE 24 V= 50 MA		
Data:		
Dimensions (LxWxH)	mm	71x44x30
Weight	kg	0,034
Mounting type	screwed in the carrying angle	
For exercises according to	PAL	
Operating voltage	(DC) V	24
Current consumption	mA	50
Type of protection	IEC 60529	IP 20



Electric button 1 open contact/1 closed contact		Material no. 1827001991
Technical description Pushbutton with 1 normally closed and 1 normally open contact By pushing the activation element, one contact is opened, the other one is closed. Upon release, the switching contacts are - by means of a return spring - returned into the rest position. Activation element black, electric connection via screw terminal, attachment in the carrying angle mat. no.: 1827003558, activation element can be separated from the contact unit. EL. TASTSCHALTER 1 OE/S		
Data:		
Dimensions (LxWxH)	mm	50x40x30
Weight	kg	0,038
Mounting type	screwed in the carrying angle	
For exercises according to	PAL	
Activation type	manually	
Switching capacity	DC 24 V	10 A
Switching capacity	AC 230 V	10 A
Type of protection	IEC 60529	IP 20



5.4 Operating and display elements

Electric rotary switch 1 open contact/1 closed contact

Material no. **1827001992**

Technical description

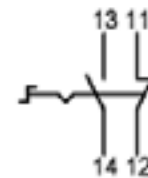
Rotary switch with stay-put position, 1 normally closed and 1 normally open contact. By turning the activation element, one contact is opened, the other one is closed.

Activation element black, electric connection via screw terminal, attachment in the carrying angle
mat. no.: 1827003558, activation element can be separated from the contact unit

EL. KNEBELSCHALTER 1 OE/S

Data:

Dimensions (LxWxH)	mm	68x42x30
Weight	kg	0,042
Mounting type	screwed in the carrying angle	
For exercises according to	PAL	
Activation type	manually	
Switching capacity	DC 24 V	10 A
Switching capacity	AC 230 V	10 A
Type of protection	IEC 60529	IP 20



Socket LED form A; BS

Material no. **1827003352**

Technical description

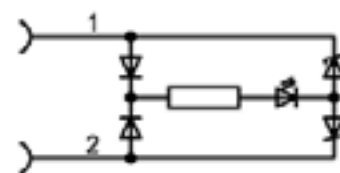
Adapter with 2 connections for laboratory plugs, signal transmission with rectification - thus, reverse polarity protection, optical display, can be used for valves and pressure switches.

Plastic housing with contact-protected 4 mm test sockets, contacting to the valve spool or pressure switches via socket coupling.

GERÄTESTECKDOSE LED FORM A BS

Data:

Dimensions (LxWxH)	mm	50x35x28
Weight	kg	0,038
Mounting type	screwed	
For exercises according to	BiBB	
Operating voltage	(AC-DC) V	22-26
Socket coupling according to	DIN 43650	Form A
Type of protection	IEC 60529	IP 20



Electrical components

5.4 Operating and display elements

Socket LED form B; BS

Material no. **1827003353**

Technical description

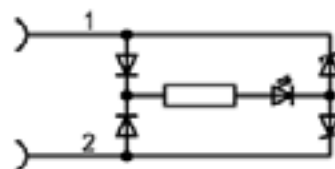
Adapter with 2 connections for laboratory plugs, signal exchange with rectification, thus, reverse polarity protection, optical display, can be used for valves and pressure switches.

Plastic housing with contact-protected 4 mm test sockets, contacting to the valve spool or pressure switches via socket coupling.

GERAETESTECKDOSE LED FORM B BS

Data:

Dimensions (LxWxH)	mm	50x35x28
Weight	kg	0,033
Mounting type	screwed	
For exercises according to	BiBB, BR	
Operating voltage	(AC-DC) V	22-26
Socket coupling according to	DIN 43650	Form B
Type of protection	IEC 60529	IP 20



Socket LED form C; BS

Material no. **1827003354**

Technical description

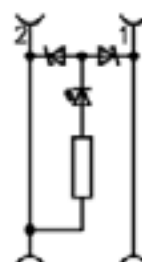
Socket with 2 connections for laboratory plugs, forwarding of the signals to valve spool, signal rectification and thus, reverse polarity protection, optical display.

Plastic housing with contact-protected 4 mm test sockets, contacting to the valve spool via socket coupling.

GERAETESTECKDOSE LED FORM C BS

Data:

Dimensions (LxWxH)	mm	39x17x28
Weight	kg	0,018
Mounting type	screwed	
For exercises according to	BiBB	
Operating voltage	(AC-DC) V	22-26
Socket coupling according to	DIN 43650	Form C
Type of protection	IEC 60529	IP 20



5.5 Measuring cables

Socket P/E form A; BS

Material no. **1827003355**

Technical description

Device adapter for electrical connection plug with 3 connections for laboratory plug, for pressure switch mat. no.: 1827003428, 1827003434.

Plastic housing with contact-protected 4 mm test sockets, contacting via socket coupling.

GERAETESTECKDOSE P/E FORM A BS

Data:

Dimensions (LxWxH)	mm	50x35x28
Weight	kg	0,039
Mounting type	screwed	
For exercises according to	BiBB	
Socket coupling according to	DIN 43650	Form A
Type of protection	IEC 60529	IP 20



Measuring cable, 250 mm; red, BS

Material no. **1827003212**

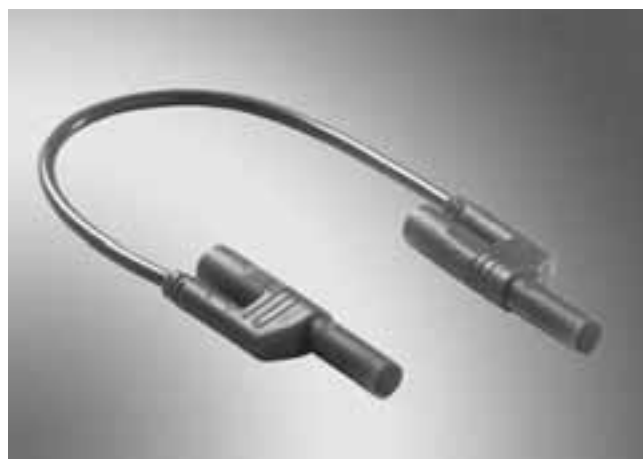
Technical description

Flexible laboratory cable with 4 mm laboratory plug, socket and pin part with contact protection, stackable, for establishing safe electric plug-in connections for exercise installations.

MESSLEITUNG 250 MM, ROT, BS

Data:

Dimensions (LxWxH)	mm	90x90x10
Weight	kg	0,022
Mounting type	plugged in	
For exercises according to	BiBB, BR	
Length	mm	250
Color	red	
Type of protection	IEC 60529	IP 20



Measuring cable, 250 mm, blue, BS

Material no. **1827003213**

MESSLEITUNG 250 MM, BLAU, BS

Measuring cable, 250 mm, black, BS

Material no. **1827003214**

MESSLEITUNG 250 MM, SCHWARZ, BS

Electrical components

5.5 Measuring cables

Measuring cable, 500 mm, red, BS		Material no. 1827003215
Technical description Flexible laboratory cable with 4 mm laboratory plug, socket and pin part with contact protection, stackable, for establishing safe electric plug-in connections for exercise installations.		
MESSLEITUNG 500 MM, ROT, BS		
Data:		
Dimensions (LxWxH)	mm	90x90x25
Weight	kg	0,028
Mounting type	plugged in	
For exercises according to	BiBB, BR	
Length	mm	500
Color	red	
Type of protection	IEC 60529	IP 20
		
Measuring cable, 500 mm, blue, BS		Material no. 1827003216
MESSLEITUNG 500 MM, BLAU, BS		
Measuring cable, 500 mm, black, BS		Material no. 1827003217
MESSLEITUNG 500 MM, SCHWARZ, BS		
Measuring cable 1000 mm, red, BS		Material no. 1827003218
Technical description Flexible laboratory cable with 4 mm laboratory plug, socket and pin part with contact protection, stackable, for establishing safe electric plug-in connections for exercise installations.		
MESSLEITUNG 1000 MM, ROT, BS		
Data:		
Dimensions (LxWxH)	mm	90x90x20
Weight	kg	0,04
Mounting type	plugged in	
For exercises according to	BiBB, BR	
Length	mm	1000
Color	red	
Type of protection	IEC 60529	IP 20
		
Measuring cable 1000 mm blue, BS		Material no. 1827003219
MESSLEITUNG 1000 MM, BLAU, BS		
Measuring cable 1000 mm black, BS		Material no. 1827003220
MESSLEITUNG 1000 MM, SCHWARZ, BS		

5.5 Measuring cables

Measuring cable, 1500 mm, red, BS

Material no. **1827003464**

Technical description

Flexible laboratory cable with 4 mm laboratory plug, socket and pin part with contact protection, stackable, for establishing safe electric plug-in connections for exercise installations.

MESSLEITUNG 1500 MM, ROT, BS

Data:

Dimensions (LxWxH)	mm	90x90x30
Weight	kg	0,05
Mounting type	plugged in	
For exercises according to	BiBB, BR	
Length	mm	1500
Color	red	
Type of protection	IEC 60529	IP 20



Measuring cable, 1500 mm, blue, BS

Material no. **1827003465**

MESSLEITUNG 1500 MM, BLAU, BS

Measuring cable, 1500 mm, black, BS

Material no. **1827003466**

MESSLEITUNG 1500 MM, SCHWARZ, BS

Red and blue connection cable; 1,5 m each; plug/clamp

Material no. **1827003005**

Technical description

Flexible laboratory cables, 2 pieces with 4 mm laboratory plugs, socket and pin part, stackable, for establishing electric plug-in connections for exercise installations.

ANSCHLUSSLEITUNG UND BLAU, JE 1,5 M L

Data:

Dimensions (LxWxH)	mm	120x70x40
Weight	kg	0,108
Mounting type	plugged in	
For exercises according to	BiBB, BR	
Length	mm	1500
Color	in each case one unit	red, blue
Type of protection	IEC 60529	IP 20



Electrical components

5.6 Accessories

Carrying angle 4-fold PAL; SIMaterial no. **1827003558****Technical description**

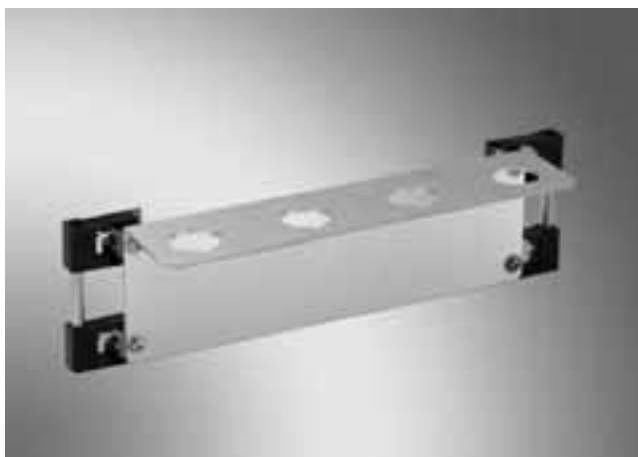
Carrying angle for the safe acceptance of 4 operating elements (e.g. switches, pushbuttons, pilot lamps).

Anodized aluminum sheet, with mounting system for grooved plate.

TRAEGERWINKEL 4-FACH PAL, SI

Data:

Dimensions (LxWxH)	mm	260x71x69
Weight	kg	0,262
Mounting type	Snap-in	
For exercises according to	PAL	

**Hat rail 300 mm; PAL; SI**Material no. **1827003560****Technical description**

Fastening rail for accepting electrical installation elements, e.g. for max. 6 relay sockets or max. 35 terminal blocks

HUTSCHIENE 300 MM PAL, SI

Data:

Dimensions (LxWxH)	mm	260x35x20
Weight	kg	0,096
Mounting type	screwed	
For exercises according to	PAL	



5.6 Accessories

Plug with threaded connector, BS

Material no. **1827003211**

Technical description

Contact-protected 4 mm laboratory plug, stackable, with screw terminal, for assembling measuring cables.

Plug with spring basket, brass nickel-plated, with plastic housing.

STECKER-SCHRAUBANSCHLUSS, BS

Data:

Dimensions (LxWxH)	mm	60x20x20
Weight	kg	0,01
For exercises according to	PAL	
Color		black
Connection cross-section	mm ²	1,5 max.



CONDUCTOR END SLEEVE 0,75-L2= 7,9MM FLANGE SIZE; Delivery unit = 100

Material no. **R900016169**

Technical description

End sleeve for strand with gray flange, as clamping protection for flexible strands.

ADERENDHUELSE 0,75-L2=7,9 KRAGEN GR

Data:

Dimensions (LxWxH)	mm	80x35x15
Weight	kg	0,011
Mounting type	clamped	
For exercises according to	PAL	
Cable cross-section	mm ²	0,75
Delivery quantity	Piece(s)	100



Electrical components

5.6 Accessories

Blue electrical cable 0,75 mm²; 25 m

Material no. 1827003031



Technical description

Flexible electrical cable, 1-pin.


ELEKTR. LEITUNG BLAU 0,75 MM²,25 M

Data:

Dimensions (LxWxH)	mm	130x130x40
Weight	kg	0,3
For exercises according to	PAL	
Length	m	25
Cable cross-section	mm ²	0,75
Color	blue	

10-fold bridge for clamps

Material no. 1827003037



Technical description

Via a screw connection, the bridge establishes a safe electrical connection between neighboring terminal blocks. A maximum of 10 terminal blocks can be connected.

BRUECKE 10-FACH FUER KLEMMEN

Dimensions (LxWxH)	mm	50X20X10
Weight	kg	0,03
Mounting type	screwed	
For exercises according to	PAL	

5.6 Accessories

Terminal block 2,5 mm²

Material no. **1827003141**

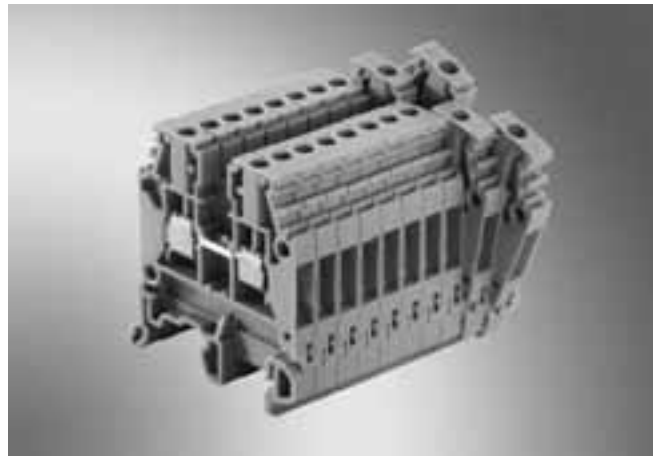
Technical description

Single terminal block, for snapping onto fastening rail
mat. no.: 1827003560.

Screw terminals of nickel-plated brass with clamping ring,
plastic body.

REIHENKLEMME 2,5 MM²

Dimensions (LxWxH)	mm	70x40x5
Weight	kg	0,010
Mounting type	plugged in	
For exercises according to	PAL	
Cable cross-section	mm ²	2,5
Delivery unit	Piece(s)	1



Clamp designation 01-40

Material no. **1827003142**

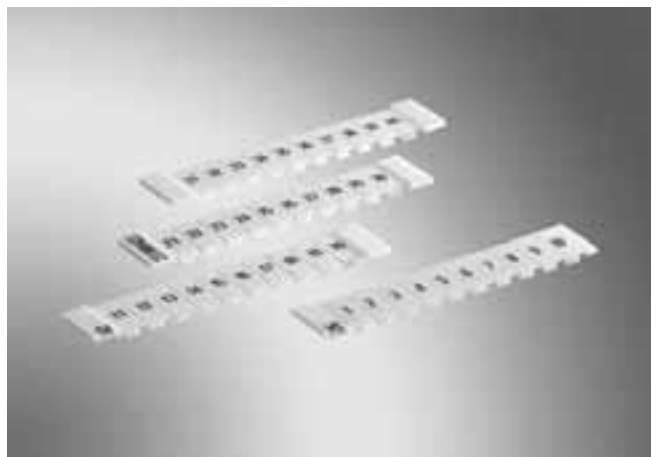
Technical description

Pluggable clamp designation with the numbers 1 to 40,
suitable for terminal block
mat. no.: 1827003141 and 1827003559.

Plastic, white, printed.

KLEMMENBEZEICHNUNG 01-40

Dimensions (LxWxH)	mm	50x10x5
Weight	kg	0,005
Mounting type	plugged in	
For exercises according to	PAL	



Electrical components

5.6 Accessories

Terminal block 35-fold PAL; SI


Material no. **1827003559**

Technical description

Preassembled terminal block 35-fold, for wiring single conductors.
Assembled on fastening rail with end angles and closing plate, clamps of nickel-plated brass with clamping ring, plastic body, with nut for the fastening in 8 mm groove.

REIHENKLEMME 35-FACH PAL, SI

Dimensions (LxWxH)	mm	260x40x70
Weight	kg	0,300
Mounting type		screwed
For exercises according to		PAL
Cable cross-section	mm ²	2,5 max



6 Accessories Pneumatics

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Accessories Pneumatics

6.1 Connections

Rectangular-connection d=4 mmMaterial no. **1823380012****Technical description**

Angle connection, 2 connections, 90 degree angle, for the installation of pneumatic circuits, by plugging in the tube end, the connection between housing and tube with O ring is securely sealed and simultaneously secured against extraction.

Brass housing nickel-plated, spring sleeve, compression ring and O ring demountable, the tube is held by a sharp edge of the spring sleeve that is installed in the housing with a conical seat.

QR2-S-RVK-DA04-DA04

Data:

Dimensions (LxWxH)	mm	22x22x9
Weight	kg	0,01
For exercises according to	BiBB, PAL, BR	
Industry type / Industry information:		
QR2-RVK series	Mat. no.:	1823380012
BRP catalog: R499 050 203 / 2005-02; page: 12.59		
Plug-in connection	mm	Ø 4

**Angle bracket 4mm Steckfix**Material no. **1823380019****Technical description**

Angle connection, 2 connections, 90 degree angle, for the installation of pneumatic circuits, by plugging in the tube end, the connection between housing and tube with O ring is securely sealed and simultaneously secured against extraction.

Brass housing nickel-plated, spring sleeve, compression ring and O ring demountable, for plastic tubes calibrated on the outside; the tube is held by a sharp edge of the spring sleeve that is installed in the housing with a conical seat.

QR2-F-RVK-DA04-DA04

Data:

Dimensions (LxWxH)	mm	22x22x10
Weight	kg	0,011
For exercises according to	BiBB, PAL, BR	
Industry type / Industry information:		
QR2 series - heat-resistant	Mat. no.:	1823380019
BRP catalog: R499 050 203 / 2005-02; page: 12.67		
Plug-in connection	mm	Ø 4



6.1 Connections

T-connection d=4 mm

Material no. **1823381043**

Technical description

T-connection with 3 connections, for the installation of pneumatic circuits, by plugging in the tube end, the connection with the basic body is securely sealed; simultaneously secured against extraction.

Brass housing nickel-plated, spring sleeve, compression and O rings demountable. The tube is held by a sharp edge of the spring sleeve that is installed in the housing with a conical seat.

QR2-S-RTK-DA04-DA04

Data:

Dimensions (LxWxH)	mm	35x22x9
Weight	kg	0,013
For exercises according to	BiBB, PAL, BR	
Industry type / Industry information:		
QR2-RTK series	Mat. no.:	1823381043
BRP catalog: R499 050 203 / 2005-02; page: 12.60		
Plug-in connection	mm	Ø 4



T-connection d=6 mm

Material no. **2121106000**

Technical description

T-connection, 3 connections, for the installation of pneumatic circuits, by plugging in the tube end, the connection between housing and tube is sealed and simultaneously locked against extraction.

Gray PBT plastic housing, POM loosening ring, the tube is held by a sharp edge of the tooth wheel, perbunan form ring for the sealing.

QR1-RTK-DA06-PMAX10BAR-(0-60)CEL

Data:

Dimensions (LxWxH)	mm	40x27x13
Weight	kg	0,01
For exercises according to	BiBB, PAL, BR	
Industry type / Industry information:		
QR1-RTK series	Mat. no.:	2121106000
BRP catalog: R499 050 203 / 2005-02; page: 12.37		
Plug-in connection	mm	Ø 6



Accessories Pneumatics

6.1 Connections

Y-connection d=4 mmMaterial no. **R412005332****Technical description**

Y-connection with 1 connection piece for plug connector and 2 plug connectors for tube connection, as distributor in the installation of pneumatic circuits, by plugging in the tube end, the connection with the basic body is sealed and simultaneously secured against extraction.

Gray PBT plastic housing, POM loosening ring, the tube is held by a sharp edge of the tooth wheel, perbunan form ring for the sealing.

QR1-RY2-DA04

Data:

Dimensions (LxWxH)	mm	49x20x12
Weight	kg	0,007

Industry type / Industry information:

QR1-RY2 series	Mat. no.:	R412005332
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BRP catalog: R499 050 203 / 2005-02; page: 12.44

2-times plug-in connection	mm	Ø 4
1-times connection piece	mm	Ø 4

**Reducing insert; d=4-6 mm**Material no. **1823391615****Technical description**

Reducer,

One side pipe socket - for plug-in connection with 6 mm internal diameter

One side plug-in connection - for pipe with 4 mm external diameter

Brass housing nickel-plated, spring sleeve, compression ring and O ring demountable, the tube is held by a sharp edge of the spring sleeve that is installed in the housing with a conical seat.

QR2-S-RED-DA06-DA04

Data:

Dimensions (LxWxH)	mm	30x10x10
Weight	kg	0,008

Industry type / Industry information:

QR2-RED series	Mat. no.:	1823391615
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BRP catalog: R499 050 203 / 2005-02; page: 12.61

Plug-in connection	mm	Ø 4
Connection piece	mm	Ø 6



6.1 Connections

Extension plugs; d=4-6 mm

Material no. **1823391628**

Technical description

Extension adapter,
One side pipe socket - for 4 mm plug-in connection
One side plug-in connection - for 6 mm pipe
Brass housing nickel-plated, spring sleeve, compression ring and O ring demountable, the tube is held by a sharp edge of the spring sleeve that is installed in the housing with a conical seat.

QR2-S-REE-DA04-DA06

Data:

Dimensions (LxWxH)	mm	35x11x11
Weight	kg	0,008
Industry type / Industry information:		
QR2-REE series	Mat. no.:	1823391628
BRP catalog: R499 050 203 / 2005-02; page: 12.61		
Plug-in connection	mm	Ø 6
Connection piece	mm	Ø 4



Double plug; d=4 mm

Material no. **1823391629**

Technical description

Connection piece for plug-in connections, for the direct connection of e.g. angle fittings and T-fittings.
Helpful for installations in confined space with short tube lengths.

Brass, nickel-plated

QR2-S-RDS-DA04-DA04

Data:

Dimensions (LxWxH)	mm	32x4x4
Weight	kg	0,002
Mounting type	plugged in	
For exercises according to	BiBB, PAL, BR	
Industry type / Industry information:		
QR2-RDS series	Mat. no.:	1823391629
BRP catalog: R499 050 203 / 2005-02; page: 12.62		
2-times connection piece	mm	Ø 4



Accessories Pneumatics

6.1 Connections

End plug

Material no. 2123204000

Technical description

End plug, for the plug-in connections that are not necessary, tool in the commissioning, assembly and fault searching.

Plastic body

VERSCHLUSSSTOPFEN BAR-(0-60)CEL

Data:

Dimensions (LxD)	mm	28 x Ø 4
Weight	kg	0,0004
For exercises according to	BiBB, PAL, BR	
Industry type / Industry information:		
QR1-RBS series	Mat. no.:	2 123 204 000
BRP catalog: R499 050 203 / 2005-02; page: 12.46		
For plug-in connection	mm	Ø 4



Male stud fitting G1/8; d=4 mm

Material no. 1823373041

Technical description

Male stud fitting for producing a flow connection from internal thread to plug-in connection for plastic tubes

Brass, nickel-plated. Sealing of the screwing fitting to the connection face and sealing of the plastic tube to the housing is in each case effected by means of an O ring. The plastic tube is held by a sharp edge of the spring sleeve and is secured against extraction.

QR2-S-RPN-G018-DA04

Data:

Dimensions (LxD)	mm	20 x Ø 13,5
Weight	kg	0,005
Mounting type	screwed	
Industry type / Industry information:		
QR2-RPN series	Mat. no.:	1823373041
BRP catalog: R499 050 203 / 2005-02; page: 12.51		
Operating pressure P	(max) bar	16
Connection thread	ISO 228/1	G1/8
Plug-in connection	mm	Ø 4
Width across flats, outside	mm	9
Width across flats, inside	mm	2,5



6.2 Screw fittings

Male stud fitting M5 with non-return valve; d=4

Material no. **1827003124**

Technical description

Male stud fitting for establishing a flow connection from internal thread to plug-in connection for plastic tube, the installed check valve blocks the flow in outflow direction, release is granted by plugging the plastic tube into the plug-in connection, inlet direction is always free.

Brass nickel-plated, seat valve, the sealing of the screw fitting to the connection face and the sealing of the plastic tube to the housing is in each case effected by means of an O ring. The plastic tube is held by a sharp edge of the spring sleeve and is secured against extraction.

GERADE VERSCHR.M5 M.RV D4,

Data:

Dimensions (LxD)	mm	35 x Ø8
Weight	kg	0,012
Mounting type	screwed	
Operating pressure	(max) bar	10
Connection thread	ISO 228/1	M5
Plug-in connection	mm	Ø 4
Width across flats, outside	mm	9



Male stud fitting M5; d=4 mm

Material no. **1823373038**

Technical description

Male stud fitting for producing a flow connection from internal thread to plug-in connection for plastic tubes.

Brass, nickel-plated. Sealing of the screw fitting to the connection face and sealing of the plastic tube to the housing is in each case effected by means of an O ring. The plastic tube is held by a sharp edge of the spring sleeve and is secured against extraction.

QR2-S-RPN-M005-DA04

Data:

Dimensions (LxD)	mm	20,5 x Ø 9
Weight	kg	0,006
Mounting type	screwed	
Industry type / Industry information:		
QR2-RPN series	Mat. no.:	1823373038
BRP catalog: R499 050 203 / 2005-02; page: 12.51		
Operating pressure	(max) bar	16
Connection thread	ISO 228/1	M5
Plug-in connection	mm	Ø 4
Width across flats, outside	mm	9
Width across flats, inside	mm	2,5



Accessories Pneumatics

6.2 Screw fittings

Male stud fitting G1/8; d=6 mmMaterial no. **1823373043****Technical description**

Male stud fitting for producing a flow connection from internal thread to plug-in connection for plastic tubes.

Brass, nickel-plated. Sealing of the screwing fitting to the connection face and sealing of the plastic tube to the housing is in each case effected by means of an O ring. The plastic tube is held by a sharp edge of the spring sleeve and is secured against extraction.

QR2-S-RPN-G018-DA06

Data:

Dimensions (LxD)	mm	24 x Ø13,5
Weight	kg	0,011
Mounting type	screwed	

Industry type / Industry information:

QR2-RPN series Mat. no.: 1823373043

BRP catalog: R499 050 203 / 2005-02; page: 12.51

Operating pressure	(max) bar	16
Connection thread	ISO 228/1	G1/8
Plug-in connection	mm	Ø 6
Width across flats, outside	mm	11
Width across flats, inside	mm	4

**Male stud fitting G1/8; d=8 mm**Material no. **1823373044****Technical description**

Male stud fitting for producing a flow connection from internal thread to plug-in connection for plastic tubes.

Brass, nickel-plated. Sealing of the screwing fitting to the connection face and sealing of the plastic tube to the housing is in each case effected by means of an O ring. The plastic tube is held by a sharp edge of the spring sleeve and is secured against extraction.

QR2-S-RPN-G018-DA08

Data:

Dimensions (LxD)	mm	26,5 x Ø13
Weight	kg	0,012
Mounting type	screwed	

Industry type / Industry information:

QR2-RPN series Mat. no.: 1823373044

BRP catalog: R499 050 203 / 2005-02; page: 12.51

Operating pressure	(max) bar	16
Connection thread	ISO 228/1	G1/8
Plug-in connection	mm	Ø 4
Width across flats, outside	mm	13
Width across flats, inside	mm	5



6.2 Screw fittings

Male stud fitting G1/4; d=4 mm

Material no. **1823373045**

Technical description

Male stud fitting for producing a flow connection from internal thread to plug-in connection for plastic tubes. Brass, nickel-plated. Sealing of the screw fitting to the connection face and sealing of the plastic tube to the housing is in each case effected by means of an O ring. The plastic tube is held by a sharp edge of the spring sleeve and is secured against extraction.

QR2-S-RPN-G014-DA04

Data:

Dimensions (LxD)	mm	21 x Ø17
Weight	kg	0,012
Mounting type	screwed	
Industry type / Industry information:		
QR2-RPN series	Mat. no.:	1827003124
BRP catalog: R499 050 203 / 2005-02; page: 12.51		
Operating pressure	(max) bar	16
Connection thread	ISO 228/1	G1/4
Plug-in connection	mm	Ø 4
Width across flats, outside	mm	9
Width across flats, inside	mm	2,5



Male stud fitting G1/4; d=6 mm

Material no. **1823373047**

Technical description

Male stud fitting for producing a flow connection from internal thread to plug-in connection for plastic tubes. Brass, nickel-plated. Sealing of the screw fitting to the connection face and sealing of the plastic tube to the housing is in each case effected by means of an O ring. The plastic tube is held by a sharp edge of the spring sleeve and is secured against extraction.

QR2-S-RPN-G014-DA06

Data:

Dimensions (LxD)	mm	24 x Ø17
Weight	kg	0,015
Mounting type	screwed	
Industry type / Industry information:		
QR2-RPN series	Mat. no.:	1823373047
BRP catalog: R499 050 203 / 2005-02; page: 12.59		
Operating pressure	(max) bar	16
Connection thread	ISO 228/1	G1/4
Plug-in connection	mm	Ø 6
Width across flats, outside	mm	11
Width across flats, inside	mm	4



Accessories Pneumatics

6.2 Screw fittings

Male stud fitting G1/4; d=8 mmMaterial no. **1823373048****Technical description**

Male stud fitting for producing a flow connection from internal thread to plug-in connection for plastic tubes. Brass, nickel-plated. Sealing of the screw fitting to the connection face and sealing of the plastic tube to the housing is in each case effected by means of an O ring. The plastic tube is held by a sharp edge of the spring sleeve and is secured against extraction.

QR2-S-RPN-G014-DA08

Data:

Dimensions (LxD)	mm	25 x Ø 17
Weight	kg	0,016
Mounting type	screwed	

Industry type / Industry information:

QR2-RPN series Mat. no.: 1823373048

BRP catalog: R499 050 203 / 2005-02; page: 12.51

Operating pressure	(max) bar	16
Connection thread	ISO 228/1	G1/4
Plug-in connection	mm	Ø 8
Width across flats, outside	mm	13
Width across flats, inside	mm	6

**Unscrewable connection G1/4; d = 4 mm**Material no. **1823391647****Technical description**

Male stud fitting for producing a flow connection from external thread to plug-in connection for plastic tubes. Brass nickel-plated, screw-on connection with internal thread, the sealing of the plastic tube to the housing is effected by means of an O ring. The plastic tube is held by a sharp edge of the spring sleeve and is secured against extraction.

QR2-S-RAI-G014-DA04

Data:

Dimensions (LxD)	mm	29,5 x Ø 16
Weight	kg	0,014
Mounting type	screwed	

Industry type / Industry information:

QR2-RAI series Mat. no.: 1823391647

BRP catalog: R499 050 203 / 2005-02; page: 12.51

Operating pressure	(max) bar	16
Connection thread	ISO 228/1	G1/4
Plug-in connection	mm	Ø 4
Width across flats, outside	mm	13



6.2 Screw fittings

Angle swivel tube fitting M5; d=4

Material no. **1823391549**

Technical description

Angle swivel tube fitting, for producing a flow connection from internal thread to plug-in connection for plastic tubes. Brass, nickel-plated. The angle swivel tube fitting consists of a housing with plug-in connection and hollow screw. Sealing of the screw fitting to the connection face, to the hollow screw and sealing of the plastic tube to the housing is in each case effected by means of an O ring. The tube is held by a sharp edge of the spring sleeve that is installed in the housing with a conical seat.

QR2-S-RW1-M005-DA04

Data:

Data:

Dimensions (LxWxH)	mm	18x22x7
Weight	kg	0,010
Mounting type	screwed	
Industry type / Industry information:		
QR2-RVI series	Mat. no.:	1823391549
BRP catalog: R499 050 203 / 2005-02; page: 12.53		
Operating pressure	(max) bar	16
Connection thread	ISO 228/1	M5
Plug-in connection	mm	Ø 4
Width across flats, outside	mm	8



Angle swivel tube fitting G1/8; d=4

Material no. **1823391551**

Technical description

Angle swivel tube fitting, for producing a flow connection from internal thread to plug-in connection for plastic tubes. Brass, nickel-plated. The angle swivel tube fitting consists of a housing with plug-in connection and hollow screw. Sealing of the screw fitting to the connection face, to the hollow screw and sealing of the plastic tube to the housing is in each case effected by means of an O ring. The tube is held by a sharp edge of the spring sleeve that is installed in the housing with a conical seat.

QR2-S-RW1-G018-DA04

Data:

Dimensions (LxWxH)	mm	28x28x14
Weight	kg	0,024
Mounting type	screwed	
Industry type / Industry information:		
QR2-RVI series	Mat. no.:	1823391551
BRP catalog: R499 050 203 / 2005-02; page: 12.53		
Operating pressure	(max) bar	16
Connection thread	ISO 228/1	G1/8
Plug-in connection	mm	Ø 4
Width across flats, outside	mm	14



Accessories Pneumatics

6.2 Screw fittings

1 distributor ring; d=4 for throttle non-return valveMaterial no. **1823391585****Technical description**

Distributor ring for establishing a swiveling distribution by means of hollow screw or as housing for throttle check valve. Brass nickel-plated, distributor ring with plug-in connection, the sealing of the plastic tube to the housing is effected by means of an O ring. The tube is held by a sharp edge of the spring sleeve that is installed in the housing with a conical seat.

QR2-S-RV1-G018-DA04

Data:

Dimensions (LxWxH)	mm	22x14x15
Weight	kg	0,010
Mounting type	clamped	
Industry type / Industry information:		
QR2-RV1 series	Mat. no.:	1823391585
BRP catalog: R499 050 203 / 2005-02; page: 12.56		
Operating pressure	(max) bar	16
For hollow screw		G1/8
Plug-in connection	mm	Ø 4

**G3/8-G1/4 reduction**Material no. **1823391013****Technical description**

Reducer from internal thread G3/8 to internal thread G1/4. Brass nickel-plated, with seal ring.

REDUZIERVERSCHRAUB

Data:

Dimensions (LxWxH)	mm	21x21x15
Weight	kg	0,015
Mounting type	screwed	
Industry type / Industry information:		
	Mat. no.:	1823391013
BRP catalog: R499 050 203 / 2005-02; page: 12.131		
External thread	Input	G3/8
Internal thread	Outlet	G1/4
Width across flats	mm	19



6.3 Silencers

Silencer G1/8

Material no. **1827000000**

Technical description

Silencer for reducing the venting noises in valve switching processes. By means of enlarged exhaust areas in the flow-through of hollow spaces in the sintered metal, the air velocity is reduced.

Flow-through cone of sintered bronze with optimized graining for flow-through volume and silencing, thread of brass.

SCHALLDAEMPFER

Data:

Dimensions (LxD)	mm	24 x Ø 16
Weight	kg	0,01
Mounting type	screwed	
For exercises according to	BiBB, PAL, BR	
Industry type / Industry information:		

Mat. no.: 1827000000

BRP catalog: R499 050 203 / 2005-02; page: 12.84

Connection thread	ISO 228/1	G1/8
Operating pressure	bar	10 max
Sound pressure level	DIN 45635, dB	75
Reduced flow-through	%	6
Width across flats	mm	13



Silencer G1/4

Material no. **1827000001**

Technical description

Silencer for reducing the venting noises in valve switching processes. By means of enlarged exhaust areas in the flow-through of hollow spaces in the sintered metal, the air velocity is reduced.

Flow-through cone of sintered bronze with optimized graining for flow-through volume and silencing. Thread of brass.

SCHALLDAEMPFER

Data:

Dimensions (LxD)	mm	33 x Ø 20
Weight	kg	0,020
Mounting type	screwed	
For exercises according to	BiBB; PAL, BR	
Industry type / Industry information:		

Mat. no.: 1827000001

BRP catalog: R499 050 203 / 2005-02; page: 12.84

Connection thread	ISO 228/1	G1/4
Operating pressure	bar	10 max
Sound pressure level	DIN 45635, dB	80
Reduced flow-through	%	22
Width across flats	mm	17



Accessories Pneumatics

6.4 Tubes

Plastic tubing 8x1 PU; LE=25 m

Material no. 1820712013

Technical description

Plastic tube for installation with static tube laying of pneumatic circuits.
Tube of polyurethane (PU) 8 x 1.15 mm, calibrated on the outside, for compressed air according to ISO 8573-1:2001; thermal application area: -40°C to +60°C.

TU1-S-PUR-008-0115-BK-0025

Data:

Dimensions (LxWxH)	mm	290x290x70
Weight	kg	0,500
For exercises according to	BiBB, PAL, BR	
Industry type / Industry information:		
TU1 series	Mat. no.:	1820712013
BRP catalog: R499 050 203 / 2005-02; page: 12.70		
Operating pressure at 20 °C	(max) bar	14
Outside diameter	mm	8
Inside diameter	mm	5,7
Bending radius	mm	30
Length	m	25
Color	black	



Plastic tubing 6x1 PU; LE=25 m		Material no. 1820712012
TU1-S-PUR-006-0105-BK-0025		
Data:		
Dimensions (LxWxH)	mm	250x250x50
Weight	kg	0,375
Outside diameter	mm	6
Inside diameter	mm	3,9
Bending radius	mm	18
Length	m	25
Color	black	

Plastic tubing 4x1 PU; LE=25 m; black		Material no. 1820712010
TU1-S-PUR-004-0075-BK-0025		
Data:		
Dimensions (LxWxH)	mm	250x250x30
Weight	kg	0,250
Outside diameter	mm	4
Inside diameter	mm	2,5
Bending radius	mm	12
Length	m	25
Color	black	

6.4 Tubes

Plastic tubing D4X1;LW2;FS;PU; LE=25 m

Material no. **1820712000**

Technical description

Plastic tube for installation with static tube laying of pneumatic circuits.

Tube of polyurethane (PU) 4x0.75 mm, calibrated on the outside, for compressed air according to ISO 8573-1:2001; thermal application area: -40°C to +60°C.

TU1-S-PUR-004-0075-TR-0025


Data:

Dimensions (LxWxH)	mm	250x250x30
Weight	kg	0,250
For exercises according to	BiBB, PAL, BR	
Industry type / Industry information:		
TU1 series	Mat. no.:	1820712000
BRP catalog: R499 050 203 / 2005-02; page: 12.70		
Operating pressure at 20 °C	(max) bar	22
Outside diameter	mm	4
Inside diameter	mm	2,5
Bending radius	mm	12
Length	m	25
Color	transparent	



Accessories Pneumatics

6.5 Cable ducts

Cable duct 200 mm PAL; SI			Material no. 1827003561
Technical description Cable duct laterally slotted, with snap-in and moveable cover, fastening with nut in 8 mm groove or with pressure sensitive tapes on smooth surface, for accepting cables and plastic tubes, improves the clarity of the installation. Gray plastic PVC			
KABELKANAL 200 MM PAL, SI			
Data:			
Dimensions (LxWxH)	mm	200x25x25	
Weight	kg	0,052	
Mounting type	screwed		
For exercises according to	PAL, BiBB, BR		
Slot width	mm	4	
Length	mm	200	

Cable duct 235 mm PAL; SI			Material no. 1827003562
KABELKANAL 235 MM PAL, SI			
Data:			
Dimensions (LxWxH)	mm	235x25x25	
Weight	kg	0,058	

Cable duct 300 mm PAL; SI			Material no. 1827003564
KABELKANAL 300 MM PAL, SI			
Data:			
Dimensions (LxWxH)	mm	300x25x25	
Weight	kg	0,065	

Cable duct 400 mm PAL; SI			Material no. 1827003566
KABELKANAL 400 MM PAL, SI			
Data:			
Dimensions (LxWxH)	mm	400x25x25	
Weight	kg	0,072	

Cable duct 500 mm PAL; SI			Material no. 1827003567
KABELKANAL 500 MM PAL, SI			
Data:			
Dimensions (LxWxH)	mm	500x25x25	
Weight	kg	0,080	

6.6 Snap in elements

Carrying plate 1 complete; SI

Material no. **1827003455**

Technical description

Carrying plate with snap in, with asymmetric bore pattern and 24 bores, for attaching components using self-tapping screws; clamps due to spring preload on clamping piece in 8 mm groove, loosening using pressure against loosening slide, can be mounted turned in steps of 90 degrees.

Carrying plate of plastic, aluminum base plate, snap in mechanism and connecting pole, carrying plate assembled on base plate in „Hole at the top“ position.

TRAEGERPLATTE 1 KOMPLETT, SI, LO

Data:

Dimensions (LxWxH)	mm	70x50x30
Weight	kg	0,094
Mounting type	Snap-in	
Mounting surface	mm	70x40
22 bores	(Ø/depth) mm	3,2 / 8
2 bores	(Ø/depth) mm	2,3 / 8
For screw	according to DIN 7981	B 3,9
For spring pin	according to DIN 7346	3x10 mm
Load-bearing capacity	(max) N	50



Carrying plate 1 complete; SI

Material no. **R961002281**

Technical description

Carrying plate with snap in, with asymmetric bore pattern and 24 bores, for attaching components using self-tapping screws; clamps due to spring preload on clamping piece in 8 mm groove, loosening using pressure against loosening slide, can be mounted turned in steps of 90 degrees.

Carrying plate of plastic, aluminum base plate, snap in mechanism and connecting pole, carrying plate assembled on base plate in „Hole at the bottom“ position.

TRAEGERPLATTE 1 KOMPLETT, SI, LU

Data:

Dimensions (LxWxH)	mm	70x50x30
Weight	kg	0,094
Mounting type	Snap in	
For exercises according to	BiBB, PAL, BR	
Mounting surface	mm	70x40
22 bores	(Ø/depth) mm	3,2 / 8
2 bores	(Ø/depth) mm	2,3 / 8
For screw	according to DIN 7981	B 3,9
For spring pin	according to DIN 7346	3x10 mm
Load-bearing capacity	(max) N	50



Accessories Pneumatics

6.6 Snap in elements

Carrying plate 2 complete; SI

Material no. **R961002283**

Technical description

Carrying plate with snap in, with asymmetric bore pattern and 10 bores, for attaching components using self-tapping screws, adjustable installation position, clamps due to spring preload on clamping piece in 8 mm groove, loosening using pressure against loosening slide, can be mounted turned in steps of 90 degrees.

Carrying plate of plastic, aluminum base plate, snap in mechanism and connecting pole, carrying plate with elongated holes, assembled on base plate in „Holes at the bottom“ position.

TRAEGERPLATTE 2 KOMPLETT, SI, LU

Data:

Dimensions (LxWxH)	mm	70x50x30
Weight	kg	0,098
Mounting type	Snap in	
Mounting surface	mm	40x32
10 bores	(Ø/depth) mm	3,2 / 8
For screw	according to DIN 7981	B 3,9
Load-bearing capacity	(max) N	50



Carrying plate 2 complete; SI

Material no. **1827003456**

Technical description

Carrying plate with snap in, with asymmetric bore pattern and 10 bores, for attaching components using self-tapping screws, adjustable installation position, clamps due to spring preload on clamping piece in 8 mm groove, loosening using pressure against loosening slide, can be mounted turned in steps of 90 degrees.

Carrying plate of plastic, aluminum base plate, snap in mechanism and connecting pole, carrying plate with elongated holes, assembled on base plate in „Holes at the top“ position.

TRAEGERPLATTE 2 KOMPLETT, SI, LO

Data:

Dimensions (LxWxH)	mm	70x50x42
Weight	kg	0,098
Mounting type	Snap-in	
Mounting surface	mm	40x32
10 bores	(Ø/depth) mm	3,2 / 8
For screw	according to DIN 7981	B 3,9
Load-bearing capacity	(max) N	50



6.6 Snap in elements

Carrying plate 3 complete; SI

Material no. **1827003457**

Technical description

Carrying plate with snap in, with asymmetric bore pattern and 10 bores, for attaching components using self-tapping screws; clamps due to spring preload on clamping piece in 8 mm groove, loosening using pressure against loosening slide, can be mounted turned in steps of 90 degrees.

Carrying plate of plastic, aluminum base plate, snap in mechanism and connecting pole, carrying plate assembled on base plate.

TRAERGERPLATTE 3-KOMPLETT, SI

Data:

Dimensions (LxWxH)	mm	110x69x30
Weight	kg	0,138
Mounting type	Snap-in	
Mounting surface	mm	110x50
7 bores	(Ø/depth) mm	3,2 / 8
3 bores	(Ø/depth) mm	2,3 / 8
For screw	according to DIN 7981	B 3,9
For spring pin	according to DIN 7346	3x10 mm
Load-bearing capacity	(max) N	50



Loosening slide extension

Material no. **1827003349**

Technical description

Extension of the release mechanics, carrying plates, with an assembly width of more than 50 mm require the extension of the loosening slide for release.

Black plastic body, with 2 bores for 2 extension dimensions, for assembly on the connecting pole.

VERLAENGERUNG LOESESCHIEBER

Data:

Dimensions (LxWxH)	mm	45x29x13
Weight	kg	0,014
Mounting type	Plugged on connecting pole	
Extension stage 1	mm	17,5
Extension stage 2	mm	30



Accessories Pneumatics

6.6 Snap in elements

Snap In, right with screw

Material no. **R961004089**

Technical description

Snap in clamping element, design „Right“: moveable clamping piece is assembled vis-à-vis the loosening slide, with self-tapping M3x8 screw and disc spring for attachment. Loosening slide of plastic, snap in mechanism of aluminum die casting.

SNAP-IN, DS, RECHTS MIT SCHRAUBE		
Dimensions (LxWxH)	mm	40x21x21
Weight	kg	0,022



Snap In, right with screw

Material no. **R961004089**

Technical description

Snap in clamping element, design „Left“: moveable clamping piece is assembled on the same side as the loosening slide, with self-tapping M3x8 screw and disc spring for attachment. Loosening slide of plastic, snap in mechanism of aluminum die casting.

SNAP-IN, DS, LINKS MIT SCHRAUBE		
Dimensions (LxWxH)	mm	40x21x21
Weight	kg	0,022



6.6 Snap in elements

Connecting pole for snap in

Material no. **1827003351**

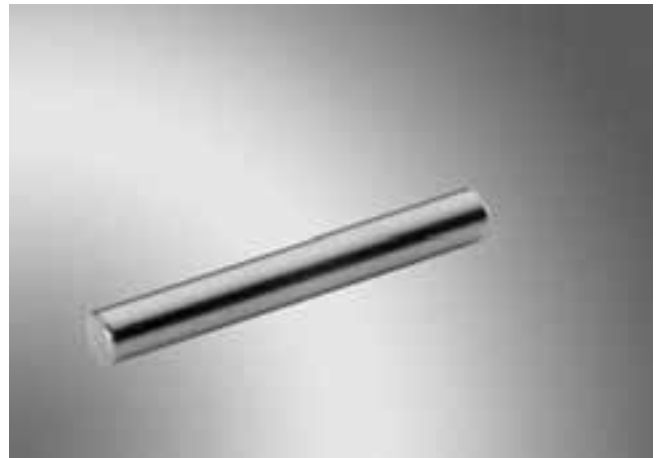
Technical description

Connecting pole for snap in, for the synchronous activation of two loosening slides assembled next to each other, for parallel snap in, in grid width 50 mm.

Brass nickel-plated, 6 mm diameter.

VERBINDUNG FUER SNAP-IN

Dimensions (LxD)	mm	46x6
Weight	kg	0,011
Mounting type	plugged in	



Accessories Pneumatics

6.7 Tools

Compressor device set incl. accessoriesMaterial no. **1827008426****Technical description**

Device set for the compressed air supply, compressor unit, pressure gauge, pressure controller, water separator, 2 compressed air connections, coupling connector with shut-off valve, T-connector and 8 m plastic tube PU 6x1.05. Low noise level, suitable for the operation in the classroom.

Compressor unit for one-phase electrical connection.

GERAETESATZ KOMPRESSOR MIT ZUBHOER**Data:**

Dimensions (LxWxH)	mm	570x380x380
Weight	kg	27
Mounting type	mobile, free-standing	
max. air quantity	l/min	50
Air pressure	(max) bar	8
Voltage	V	230
Frequency	Hz	50
Connection output	VA	340
Volume	dB	40

**Compressor 110 device set incl. accessories**Material no. **R961003964****Technical description**

Device set for the compressed air supply, compressor unit, pressure gauge, pressure controller, water separator, 2 compressed air connections, coupling connector with shut-off valve, T-connector and 8 m plastic tube PU 6x1.05. Low noise level, suitable for the operation in the classroom.

Compressor unit for one-phase electrical connection.

GERAETESATZ KOMPRESSOR 110V MIT ZUBHOER

Dimensions (LxWxH)	mm	570x380x380
Weight	kg	27
Mounting type	mobile, free-standing	
max. air quantity	l/min	50
Air pressure	(max) bar	8
Voltage	V	110
Frequency	Hz	60
Connection output	VA	340
Volume	dB	40



6.7 Tools

Compressor

Material no. **R900891168**

Technical description

Compressor for the compressed air supply, pressure gauge, pressure controller, water separator, 2 compressed air connections, low noise level, suitable for the operation in the classroom.

Compressor unit for one-phase electrical connection.

KOMPRESSOR HPF-ZP13 KPL.

Data:

Dimensions (LxWxH)	mm	570x380x380
Weight	kg	27
Mounting type	mobile, free-standing	
max. air quantity	l/min	50
Air pressure	(max) bar	8
Voltage	V	230
Frequency	Hz	50
Connection output	VA	340
Volume	dB	40



Compressor 110 V

Material no. **R961003963**

Technical description

Compressor for the compressed air supply, pressure gauge, pressure controller, water separator, 2 compressed air connections, low noise level, suitable for the operation in the classroom.

Compressor unit for one-phase electrical connection.

KOMPRESSOR BRILLANT 110V LEISE &

Dimensions (LxWxH)	mm	570x380x380
Weight	kg	27
Mounting type	mobile, free-standing	
max. air quantity	l/min	50
Air pressure	(max) bar	8
Voltage	V	110
Frequency	Hz	60
Connection output	VA	340
Volume	dB	40



Accessories Pneumatics

6.7 Tools

Pipe cutter		Material no. 1823391390
Technical description Pipe cutter manually operated, the blade cuts the lead pipe free of burs. Body of gray plastic (polyamide); blade of stainless steel. TEILESATZ		
Data:		
Dimensions (LxWxH)	mm	80x25x30
Weight	kg	0,03
Accessories	Mat. no.:	1823391390
Industry type / Industry information:		
RB catalog, 1987 765 015 / 98.02; page: 10.120		
Outside pipe diameter	(max) mm	Ø 16



Tool set for pneumatics		Material no. 1827003025
Technical description Assortment of tools, with rolling bag. The assortment consists of: Double open-ended wrench 6x7; 8x9; 12x13; 13x14 / slotted screw driver 3.0x80; 5.5x125 / Allen wrench 2.5 / Phillips screwdriver size 1 / rolling bag of hard-wearing soft PVC.		
WERKZEUGSATZ R PAL		
Data:		
Dimensions (LxWxH)	(rolled) mm	320x90x90
Weight	kg	0,350
For exercises according to		



6.7 Tools

Screwdriver TORX T10

Material no. **R900043942**

Technical description

TORX - screwdriver, size T10.

Screwdriver with shank of hardened tool steel and a handle of hard plastic.

SCHRAUBENDREHER TORX T10

Data:

Dimensions (LxWxH)	mm	200x30x30
Weight	kg	0,030
For exercises according to	BiBB, PAL, BR	
For screw head	Size	T10



Forked lever tool; loosening tool; WZ-LW

Material no. **1823391651**

Technical description

Forked lever tool as loosening aid for plug connectors, for tube diameters 4, 5, 6, 8, 10, 12, 14 mm.

Steel plate galvanized.

GABELHEBEL

Data:


Dimensions (LxWxH)	mm	98x25x4
Weight	kg	0,022
Industry type / Industry information:		
	Mat. no.:	1823391651

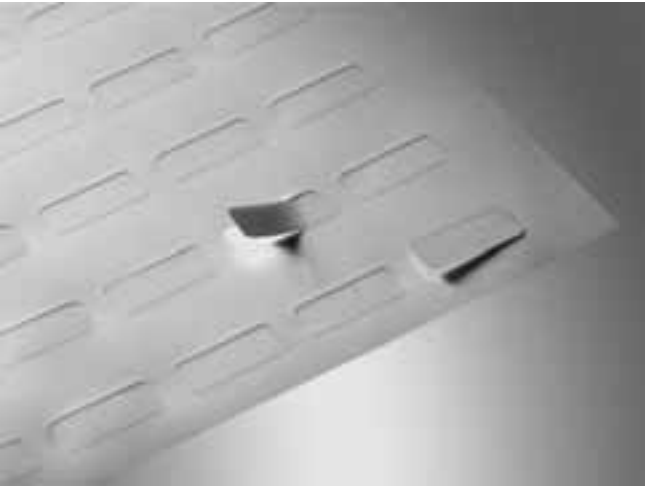
BRP catalog R499 050 203 / 2005-02; page: 12.62



Accessories Pneumatics

6.8 Consumables

Cable fastener l=130 mm			Material no. 1821025000
Technical description Cable fastener for tying up tubes or cables or for fastening single components. Useful for producing clearly arranged installations. Plastic, with self-inhibiting lock when tightening it.			
KABELBINDER			
Data:			
Dimensions (LxWxH)	mm	190x140x30	
Weight	kg	0,072	
For exercises according to	BiBB, PAL, BR		
Length	mm	130	
Delivery unit	Piece(s)	50 in bag	

Sticker labels; 80 pcs.			Material no. 1829929200
Technical description Pressure-sensitive labels for labeling the components used in the pneumatic system. Metal surface, writable using pencil and biro, easily formable, the pressure-sensitive adhesive used is water-resistant.			
BEZEICHNUNGSSCHILD			
Data:			
Dimensions (LxWxH)	mm	210x145x1	
Weight	kg	0,006	
Mounting type	pressure-sensitive		
For exercises according to	PAL, BiBB, BR		
Delivery amount, on sheet	Piece(s)	80	

7 Teachware

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Overview Teachware

BiBB exercise series Practice for Prof., Basic pneumatics

Teacher handbook	Language	Student handbook	Language
R901005712	DE	R901005737	DE
R900783082	EN	R927001116	EN
R901005726	ES	R901005738	ES

BiBB exercise series Practice for Prof., Electropneumatics

Teacher handbook	Language	Student handbook	Language
R901005727	DE	R901005741	DE
R900783083	EN	R927001115	EN
R901005735	ES	R901005744	ES

The Pneumatic Trainer, Volume 1, Basics

Material no.	Language
R900 018 134	DE
R900 018 136	EN
R900 018 138	ES

The Pneumatic Trainer, Volume 2, Electropneumatics

Material no.	Language
R900018144	DE
R900018146	EN
R900018152	ES

Pneumatics. Theory and Application

Material no.	Language
R961000783	DE
R927001146	EN
R927001001	ES

Basic Pneumatics WebTr@iner

Single license	Language	School license	Language
1070083007	DE, EN, ES	R961003133	DE, EN, ES

Media from Basic Pneumatics WebTr@iner

Material no.	Language
R961001731	DE, EN, ES

Teachware

Overview Teachware

Pneumatic systems WebTr@iner

Single license	Language	School license	Language
R961001656	DE, EN, ES	R961003132	DE, EN, ES

Media from Pneumatic systems WebTr@iner

Material no.	Language
R961001732	DE, EN, ES

Basic pneumatics eScript

Material no.	Language
R961002074	DE

PNgraphics, Slides from "Pneumatics. Theory and Applications"

Material no.	Language
R900701018	DE, EN, ES, FR

Overhead slides on pneumatics

Material no.	Language
R900084596	DE, EN
R900700597	ES, FR

Overhead slides on pneumatics

Material no.	Language
R900087135	DE, EN
R900700724	ES, FR

Symbol stencil

Material no.	Language
R900018486	neutral

Slide rule on pneumatics

Material no.	Language
R961000803	DE

Training charts set on pneumatics

Material no.	Language
R961000802	DE, EN

Magnetic symbols on pneumatics and hydraulics

Material no.	Language
1827003030	neutral

7.1 Exercise manuals for trainers and trainees

Exercise series "Practice for Prof., Pneumatics" Trainer's manual DE

Material no. **R901005712**

Technical description

Trainer's manual for BiBB exercises on pneumatics.

The exercises contained correspond to the BiBB series „Pneumatic tasks, protocol sheets, exercise circuits“, 2nd edition 1999, DE ISBN 3-410-70437-x and the previous BiBB editions of the Federal Institute for Vocational Training Research in Berlin.

The manual is adjusted to the proposed device sets and offers a practical training in the different pneumatic training levels. The collection of tasks is amended by detailed information for the trainee as well as the trainer. The layout is structured consistently and explains the execution of the tests regarding the single experiments step-by-step. Clarification questions complete the test series.

Topics of the exercises: Direct and indirect activation of single-acting cylinders, direct and indirect activation of double-acting cylinders, logic controls with alternating and two pressure valves, sequence controls.



HANDBUCH PN PRAXIS-KOLL. LH DE

Data:

Dimensions (LxWxH)	mm	290x210x9
Weight	kg	0,270
glued	4 times perforated	
For exercises according to	BiBB, BR	
Pages	double-sided	60
Print colors	black/white	
Language	German	

Language	Material no.
EN	R900783082
ES	R901005726

Teachware

7.1 Exercise manuals for trainers and trainees

Exercise series “Practice for Prof., Pneumatics”
Trainee’s manual DE

Material no. **R901005737**

Technical description
Trainee's manual for BiBB exercises on pneumatics.
The mat. no. of the related trainer's manual is R901005712.
The book contains work sheets for entering the determined results.
Topics of the exercises: Direct and indirect activation of single-acting cylinders, direct and indirect activation of double-acting cylinders, logic controls with alternating and two pressure valves, sequence controls.

HANDBUCH PN PRAXIS-KOLL.		SH DE
Data:		
Dimensions (LxWxH)	mm	290x210x10
Weight	kg	0,320
glued	4 times perforated	
For exercises according to	BiBB, BR	
Pages	one-sided	35
Print colors	black/white	
Language	German	



Language	Material no.
EN	R927001116
ES	R901005738

7.1 Exercise manuals for trainers and trainees

Exercise series "Practice for Prof., Electropneumatics/PLC/Pneum. controls" Trainer's manual DE

Material no. **R901005727**

Technical description

Trainer's manual for BiBB exercises on electropneumatics. The exercises contained correspond to the BiBB series „Pneumatic tasks, protocol sheets, exercise circuits“, 2nd edition 1999, DE ISBN 3-410-70437-x and the previous BiBB editions of the Federal Institute for Vocational Training Research in Berlin.

The manual is adjusted to the proposed device sets and offers a practical training in the different electropneumatic training levels. The collection of tasks is amended by selected information for the topic. The layout is structured consistently and explains the execution of the tests regarding the single experiments step-by-step. The mat. no. of the related trainee's manual is: R901005741. It contains work sheets for entering the determined results. Clarification questions complete the test series.

Topics of the exercises: Pilot control of single-acting cylinders, pilot control of double-acting cylinders, basic circuits with AND and OR linkings, basic circuits with electrical self-holding circuits, position-dependent control of double-acting cylinders, stop controls of double-acting cylinders, two-hand safety controls electrical, sequence control with and without signal overlapping, sequence control with and without step chain, sequence control with PLC, pressure control, position control with rodless cylinder.

HANDBUCH PN ELEKTRO PRAXIS-KOLL. LH DE

Data:

Dimensions (LxWxH)	mm	290x210x9
Weight	kg	0,270
glued	4 times perforated	
For exercises according to	BiBB, BR	
Pages	double-sided	93
Print colors		black/white
Language		German



Language	Material no.
EN	R900783083
ES	R901005735

Teachware

7.1 Exercise manuals for trainers and trainees

Exercise series “Practice for Prof., Electropneumatics/PLC/Pneum. controls” Trainee’s manual
DE

Material no. **R901005741**

Technical description

Trainee’s manual for BiBB exercises on electropneumatics. The mat. no. of the related trainer’s manual is R901 005 727. The book contains work sheets for entering the determined results. Clarification questions complete the collection of tasks.

Topics of the exercises: Pilot control of single-acting cylinders, pilot control of double-acting cylinders, basic circuits with AND and OR linkings, basic circuits with electrical self-holding circuits, position-dependent control of double-acting cylinders, stop controls of double-acting cylinders, two-hand safety controls electrical, sequence control with and without signal overlapping, sequence control with and without step chain, sequence control with PLC, pressure control, position control with rodless cylinder.



HANDBUCH PN ELEKTRO PRAXIS-KOLL. SH DE		
Data:		
Dimensions (LxWxH)	mm	290x210x9
Weight	kg	0,270
glued	4 times perforated	
For exercises according to	BiBB, BR	
Pages	one-sided	53
Print colors	black/white	
Language	German	

Language	Material no.
EN	R927001115
ES	R901005744

7.2 Textbooks

The Pneumatic Trainer, Volume 1 - de

Material no. **R900018134**

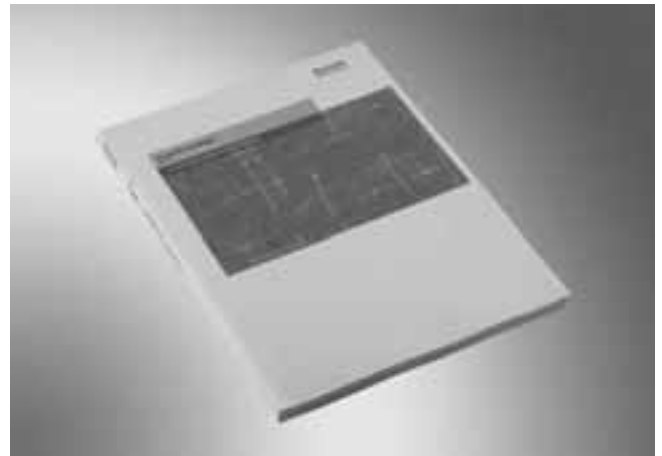
Technical description

Text and information book from the „The Pneumatic Trainer“ series“. The books describe the structure and functionality of components of the pneumatic drive and control technology. Contents: Properties and applications of pneumatics, physical basics, energy source compressed air, pneumatic drives, pneumatic control elements, special devices, special valves and systems, lines and accessories, pneumatic circuits, parameters and design of pneumatic plants, standards and directives, pneumatic plants with functional description and control technology basics, circuit examples, fundamentals of digital technology with pneumatic devices for logic functions, pneumatic sequence controls with program types, operating modes and locks in pneumatic controls, test tasks.

RD-00296 PNEUMATIK TRAINER BD.1

Data:

Dimensions (LxWxH)	mm	300x210x10
Weight	kg	0,72
bound	Cover Glazed board	
For exercises according to	BiBB, PAL, BR as textbook	
Pages	double-sided	182
Print colors	two colored	
Language	German	



Language	Material no.
EN	R900018136
ES	R900018138

Teachware

7.2 Textbooks

The Pneumatic Trainer, Volume 2 - de	Material no. R900018144
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Technical description
Textbook on electropneumatics from the „The Pneumatic Trainer“ series“. The book describes the structure and functionality of components of the pneumatic drive and control technology.
Contents: Introduction, electronic basics, protection measures, devices for electropneumatic control, command and notification devices, analog and digital signals, electropneumatic devices, tasks on electropneumatic control technology, introduction into PLC, standardized representations.

RD-00262 PNEUMATIK TRAINER BD.2

Data:		
Dimensions (LxWxH)	mm	300x210x10
Weight	kg	0,656
glued	Cover Glazed board	
For exercises according to	BiBB, PAL, BR as textbook	
Pages	double-sided	176
Print colors	four colored	
Language	German	



Language	Material no.
EN	R900018146
ES	R900018152

7.2 Textbooks

Book "Pneumatics. Theory & Application" - de

Material no. **R961000783**

Technical description

The book describes and illustrates in a compact form the variety of pneumatic and electropneumatic components (without proportional and control components), as well as their functions and areas of application.

Contents:

Functional device description: Drive elements, signal elements, control and actuating elements, vacuum technology, flow-control valves, pressure valves, air preparation, accessories, structural units.

Control technology: Graphical symbols, functional diagram, function plans, circuit diagrams, calculations.

Recommendable as accessories:

Drawings, circuit diagrams and color graphics from the book on the „PNgraphics“ CD-ROM, mat. no.: R900701018.



HANDBUCH PN IN THEORIE UND PRAXIS DE

Data:

Dimensions (LxWxH)	mm	300x220x13
Weight	kg	0,350
bound	Cover Glazed board	
For exercises according to	BiBB, PAL, BR as textbook	
Number of pages	166	
Print colors	four colored	
Language	German	

Language	Material no.
EN	R927001146
ES	R927001001

Teachware

7.3 Software

WebTr@iner Pneumatics Basics., Single I. - de/en/esMaterial no. **1070083007****Technical description**

The programs of the WebTr@iner series have been developed in Internet technology and allow for learning at the PC. Utilization of multimedia elements in connection with interactive animation promotes the motivation of the learner and achieves a sustainable knowledge transfer by exercising in the „Virtual practice“. The WebTr@iner is suitable for both, autodidacts who want to become acquainted with a topic or refresh their knowledge and for teachers and trainers who want to integrate new learning media into their classes. For the simple incorporation into a digital learning document, the single media of the WebTr@iner are available on a separate „PNmedi@1“ CD.

Content:

Compressed air production, pressure regulator, conditioning unit, throttle check valve, 3/2-way control valve - mechanically activated, 5/2-way control valve - electrically activated, cylinder - single-acting, cylinder - double-acting - end position cushioning, rotary drive.

WEBTRAINER PNEUMATIK-EL DE/EN/ES

Data:

Dimensions (LxWxH)	mm	145x125x10
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Weight	kg	0,088
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Language version	German, English, Spanish
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System requirements

Windows 98, ME, NT4.0, SP4, 2000, XP; Pentium 200Mhz, 64MB RAM; (128MB RAM required for XP); 16x speed CD-ROM

Screen, graphic board	1024x768; 65536 colors;
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Application programs

„Internet Explorer 5.x or Netscape Communicator 6.2
Internet Explorer 6.x for XP; Java Runtime Environment (JRE for XP)“

**WebTr@iner Basic pneumatics, school license, de/en/es**Material no. **R961003133**

WEBTRAINER PNEUMATICS SL DE/EN/ES

7.3 Software

Pneumatic Systems WebTr@iner single license - de/en/es

Material no. **R961001656**

Technical description

The programs of the WebTr@iner series have been developed in Internet technology and allow for learning at the PC. Utilization of multimedia elements in connection with interactive animation promotes the motivation of the learner and achieves a sustainable knowledge transfer by exercising in the „Virtual practice“. The WebTr@iner is suitable for both, autodidacts who want to become acquainted with a topic or refresh their knowledge and for teachers and trainers who want to integrate new learning media into their classes. For the simple incorporation into a digital learning document, the single media of the WebTr@iner are available on a separate „PNmedi@/2“ CD.

Content:

Shuttle valve (OR), two pressure valve (AND), system with adjustable cylinder stroke, system with adjustable feed and cylinder stroke, system for controlling the cylinder force, system for blocking the cylinder movement, system with different motion sequences, systems with local peripherals, diagnosis in systems with local peripherals.

WEBTRAINER PNEUMATIK-SYS-EL DE/EN/ES

Data:

Dimensions (LxWxH)	mm	145x125x10
Weight	kg	0,088
Language version	German, English, Spanish	

System requirements

Windows 98, ME, NT4.0, SP4, 2000, XP; Pentium 200Mhz, 64MB RAM; (128MB RAM required for XP); 16x speed CD-ROM

Screen, graphic board 1024x768; 65536 colors;

Application programs

„Internet Explorer 5.x or Netscape Communicator 6.2
Internet Explorer 6.x for XP; Java Runtime Environment (JRE for XP)“



Pneumatic Systems WebTr@iner school license - de/en/es

Material no. **R961003132**

WEBTRAINER PNEUMATIC SYS SL DE/EN/ES

Teachware

7.3 Software

**CD-ROM, Media from Basic Pneumatics
WebTr@iner - de/en/es**Material no. **R961001731****Technical description**

Separate media modules (e.g. videos) from the Basic Pneumatics WebTr@iner for the integration into the own didactic method.

Contents:

Compressed air production, pressure regulator, conditioning unit, throttle check valve, 3/2-way control valve - mechanically activated, 5/2-way control valve - electrically activated, cylinder - single-acting, cylinder - double-acting with end position cushioning, rotary drive.

CD: PNMEDIA1 DE/EN/ES

Data:

Dimensions (LxWxH)	mm	145x125x10
Weight	kg	0,088

System requirements

„They comply with the Basic Pneumatics WebTr@iner.
Additional plug ins are contained on the CD-ROM.“:

**CD-ROM, Media from Pneumatic Systems
WebTr@iner - de/en/es**Material no. **R961001732****Technical description**

Separate media modules (e.g. videos) from the Pneumatic Systems WebTr@iner for the integration into the own didactic method.

Content:

Shuttle valve (OR), two pressure valve (AND), system with adjustable cylinder stroke, system with adjustable feed and cylinder stroke, system for controlling the cylinder force, system for blocking the cylinder movement, system with different motion sequences, systems with local peripherals, diagnosis in systems with local peripherals.

CD: PNMEDIA2 DE/EN/ES

Data:

Dimensions (LxWxH)	mm	145x125x10
Weight	kg	0,088

System requirements

„They comply with the Pneumatic Systems WebTr@iner.
Additional plug ins are contained on the CD-ROM.“:



7.3 Software

SOFTWARE E-SCRIPT PN/K1 de

Material no. **R961002074**

Technical description

Multimedia seminar document, contains theoretic basics as well as exercises for trainers and trainees; in Powerpoint format with integrated media like PDFs, videos, interactive cross-section models, interactive exercises. The printed form is a participant document. The presentation document on the PC is a digital trainer document.

It is possible to change the content of the e-script, amend it by new elements and thus adjust it in an individual way, even if you only have little Powerpoint knowledge.

Contents:

Control of single-acting cylinders, double-acting cylinder with direct and indirect control and with hold element; velocity control, stop control, position- and time-dependent function sequence; logic control; two-hand safety control; sequence control without signal overlapping and with signal overlapping; sequence control detached with system circuit; sequence control detached with sequence cascade technology, vacuum technology, component design.



SOFTWARE E-SCRIPT PN/K1		DE
Data:		
Dimensions (LxWxH)	mm	145x125x10
Weight	kg	0,088
System requirements:		
Windows 98, ME, NT4.0, SP4, 2000, XP; Pentium 200Mhz, 64MB RAM; (128MB RAM required for XP); 16x speed CD-ROM		
Screen, graphic board: 1024x768; 65536 Farben;		
Application programs:		
„Internet Explorer 5.x or Netscape Communicator 6.2 Internet Explorer 6.x for XP; Java Runtime Environment (JRE for XP)“		
More multimedia elements		
CD: PNmedia/1;	1	R961001731
CD: PNmedia/2	1	R961001732
CD: Pngraphics	1	R900701018

Language	Material no.
EN	At request
ES	At request

Teachware

7.4 Slide sets

**CD-ROM “PNgraphics”, Slides for the manual
“Pneumatics. Theory and Applications”**Material no. **R900701018****Technical description**

Drawings, circuit diagrams and color graphics from the textbook „Pneumatics. Theory and Applications“ have been prepared as ppt slides. Headlines, legends, information and denominations are selectable in the languages German, English and Spanisch. Extensive presentation for the direct utilization as teaching medium in the teaching units.

Sorted and easily findable by means of the page number of the book, by means of the caption of the book, full text search regarding the captions simplifies the search for certain topics without knowing the structure.

CD: PN GRAPHICS DE/EN/ES/FR

Data:

Dimensions (LxWxH)	mm	145x125x10
Weight	kg	0,088
File format		pdf
Slide format, size	portrait and landscape	DIN A4
symbols used	according to	DIN ISO 1219



7.4 Slide sets

OHP, Pneumatics, 40 slides - de/en

Material no. **R900084596**

Technical description

Overhead slide set on basic pneumatics and functional elements, individual situational comments can be removed using spirit, the imprint remains. The statements with regard to the content are largely language-neutral. Slides combined in files, 4 times perforated, transparent, smear-resistant colors, alcohol resistant.

Topics of the slides:

Air preparation:

Humidity diagram, piston compressor, maintenance unit, compressed air filter, pressure controller, pneumatic oiler, start-up unit, pressure gauge.

Cylinders:

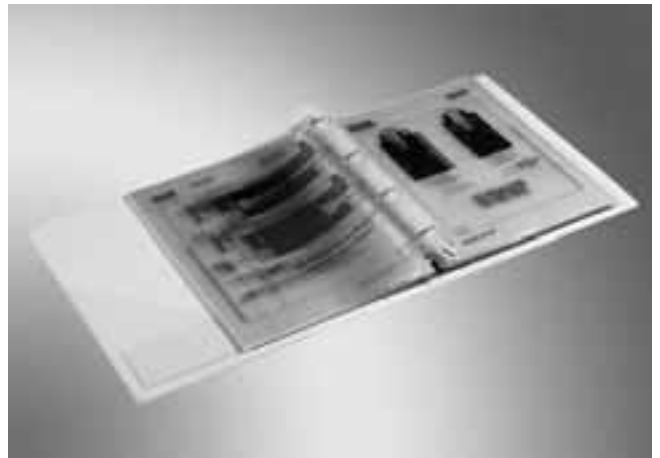
single-acting cylinder, double-acting cylinder, cylinder without piston rod, band-type cylinder principle, rodless cylinder principle, rolling diaphragm cylinder.

Valves:

3/2-way control valve, 5/2-way control valve, throttle, throttle check valve, supply air throttling / exhaust air throttling, pilot operated check valve, rapid exhaust valve, shuttle valve (OR), double shut-off valve (AND), overflow valve, time control valve.

Control technology:

Graphical symbols according to DIN ISO 1219, circuit diagram structure, control chain.



FOLIENSAMMLUNG PNEUMATIK		DE/EN
Data:		
Dimensions (LxWxH)	mm	330x300x60
Weight	kg	1,42
filed in folder	4 times perforated, in cover	
For exercises according to	BiBB, PAL, BR	
Format, size	portrait and landscape	DIN A4
Language	German	English
Number of slides	Piece(s)	40

Language	Material no.
ES, FR	R900700724

Teachware

7.4 Slide sets

OHP, Electropneumatic, 36 slides - de/enMaterial no. **R900087135****Technical description**

Overhead slide set on electropneumatics and its functional elements; transparent, smear-resistant, alcohol-resistant colors; individual situational comments can be washed off after utilization using spirit, the presentations are largely language-neutral.

Topics of the slides:

Control:

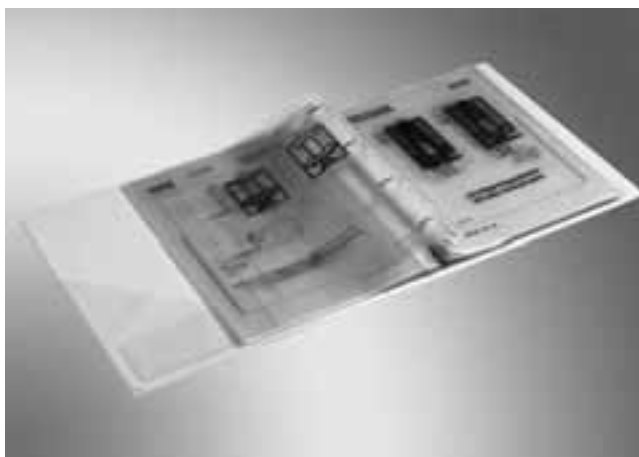
Buttons, limit sensors (changeover), limit sensors (2 power circuits), contactor, relay, time behavior with pick-up delay, time behavior with dropout delay, optical proximity switches, inductive proximity switches, capacitive proximity switches, electromagnetic magnetic field switch, reed switch, pressure switch.

Valves:

3/2-way solenoid valve, 4/2-way solenoid valve, 5/2-way solenoid valve, electro-pneumatic pressure regulator valve, highly dynamical control valve.

Control technology:

Symbols for lines and line connectors, symbols for contactors and relays, symbols for switches and actuations, functional diagram, presentation in the functional diagram, protection types, labeling of electrical equipment, connection between graphical and logical symbols, circuit diagram with clamp assignment plan.

**FOLIENSAMMLUNG ELEKTRO-PNEUMATIK D/E****Data:**

Dimensions (LxWxH)	mm	330x300x60
Weight	kg	1,374
filed in folder	4 times perforated, in cover	
For exercises according to	BiBB, PAL, BR	
Format, size	portrait and landscape	DIN A4
Language	German	English
Number of slides	Piece(s)	36

Language	Material no.
ES, FR	R900700597

7.5 Working materials

Symbol stencil HY/PN

Material no. **R900018486**

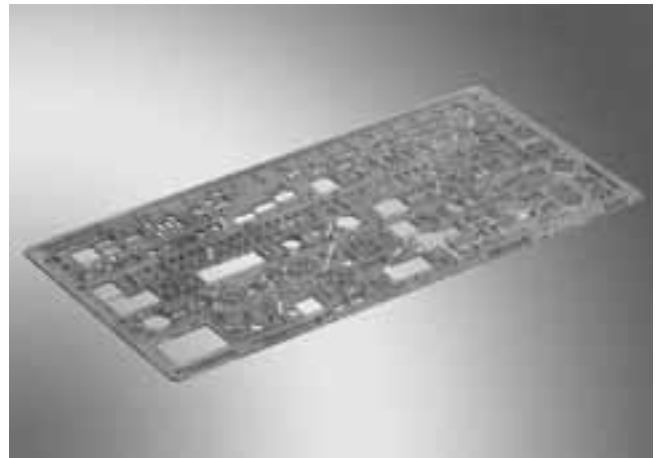
Technical description

The stencil contains the graphical symbols for hydraulic and pneumatic fluid concepts for their manual preparation. Additionally circles, rectangles and triangles in 10 different sizes, standard fonts, metric and imperial ruler. Transparent, flexible plastic, with distance nobs, tapered cutting in order to prevent the ink from running.

RD-00384 ZEICHENSCHABLONE HYDRAULIK

Data:

Dimensions (LxWxH)	mm	200x100x1
Weight	kg	0,02
Line thickness	mm	0,5
Material	Plastic	transparent, red



PN slide rule - de

Material no. **R961000803**

Technical description

Slide rule for dimensioning and checking pneumatic applications.

On the front side: for piston force and retraction force,

On the back side: for stroke volume, flow rate, stroke volume at normal conditions and stroke time.

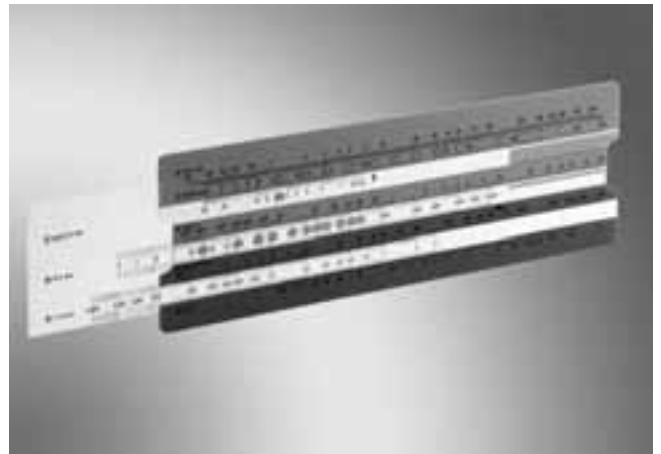
With calculation examples, explanations of the physical parameters and specifications of the formulae used.

Flexible plastic, 13 scales, with protective cover, instruction in German.

PN-RECHENSCHIEBER DE

Data:

Dimensions (LxWxH)	mm	220x85x8
Weight	kg	0,066



Teachware

7.5 Working materials

7 sets of “Pneumatics” training charts - de/en

Material no. **R961000802**

Technical description
Training chart on pneumatics, 4 color print with smooth surface, detailed illustration of the functionality and product characteristics on 7 topics.
The topics are:
compressed air preparation, isolator valves, flow control valves, signal valves, directional valves, piston rod cylinders, operated pneumatic drive

LEHRTAFELSATZ PNEUMATIK	DE/EN
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Data:		
Dimensions (LxWxH)	mm	600 x Ø80
Weight	kg	0,4
On topics according to	BiBB, PAL, BR	
Format	DINA3	Portrait
Languages	1 page German	1 page English

7.5 Working materials

Pneumatic; hydraulic; electric sticker symbol case

Material no. **1827003030**

Technical description

Extensive, magnetically adhering symbols for setting up and explaining fluid plans, for pneumatics, electro pneumatics and hydraulics, provided in a plastic case with clearly arranged internal division and with table of contents.

Can easily be placed and moved, utilization on white boards in connection with board markers, can be quickly used near the workplace without computer, easy modification of the plans during the teaching conversation.

Topics of the magnetic symbols:

Double-acting cylinder; single-acting cylinder; pneumatic motor; swivel drive; hydraulic motor; shut-off valve; 2/2-way control valve; 3/2-way control valve with rest position closed; 3/2-way control valve rest position closed-flow in both directions possible; 3/2-way control valve with through rest position; 4/2-way control valve; 4/3-way control valve with middle position closed; 4/3-way valve middle position subject to pressure; 4/3-way control valve middle position pressure discharged; 4/3-way control valve middle position connected; 5/2-way control valve-flow in both directions possible; 5/2-way control valve-flow in one direction possible; 5/3-way control valve with middle position closed; 5/3-way control valve with middle position subject to pressure; 5/3-way control valve middle position pressure discharged; throttle check valve adjustable; throttle adjustable; check valve; two pressure valve; alternating valve; rapid exhaust valve; pressure relief valve; pressure reducing valve; 2-way flow control valve; 3-way flow control valve; maintenance unit; maintenance unit-in detail; hydraulic aggregate; hydraulic pump, relay; solenoid coil; sensor; light-emitting diode.

HAFTSYMBOLKOFFER PNEUMATIK, HYDRAULIK, E

Data:

Dimensions (LxWxH)	mm	415x245x150
Weight	kg	5,4
Mounting type	magnetically adhering	
Line thickness	mm	4
Number	Piece(s)	170
Symbols	according to	DIN-ISO 1219



8 Material number overview

0821200212	Throttle check valve G1/8 for distributor ring	67
1070083007	WebTr@iner Pneumatics Basics., Single l. - de/en/es	142
1820712000	Plastic tubing D4X1;LW2;FS;PU:L=25 m	121
1820712010	Plastic tubing 4x1 PU; LE=25 m; black	120
1820712012	Plastic tubing 6x1 PU; LE=25 m	120
1820712013	Plastic tubing 8x1 PU; LE=25 m	120
1821025000	Cable fastener l=130 mm	132
1823219004	PVC cam M10x1,25	49
1823219007	Steel cam M10x1,25	49
1823373038	Male stud fitting M5; d=4 mm	113
1823373041	Male stud fitting G1/8; d=4 mm	112
1823373043	Male stud fitting G1/8; d=6 mm	114
1823373044	Male stud fitting G1/8; d=8 mm	114
1823373045	Male stud fitting G1/4; d=4 mm	115
1823373047	Male stud fitting G1/4; d=6 mm	115
1823373048	Male stud fitting G1/4; d=8 mm	116
1823380012	Rectangular-connection d=4 mm	108
1823380019	Angle bracket 4mm Steckfix	108
1823381043	T-connection d=4 mm	109
1823391013	G3/8-G1/4 reduction	118
1823391136	PN pressure display d=4 mm red	75
1823391390	Pipe cutter	130
1823391549	Angle swivel tube fitting M5; d=4	117
1823391551	Angle swivel tube fitting G1/8; d=4	117
1823391585	1 distributor ring; d=4 for throttle non-return valve	118
1823391615	Reducing insert; d=4-6 mm	110
1823391628	Extension plugs; d=4-6 mm	111
1823391629	Double plug; d=4 mm	111
1823391647	Unscrewable connection G1/4; d = 4 mm	116
1823391651	Forked lever tool; loosening tool; WZ-LW	131
1827000000	Silencer G1/8	119
1827000001	SILENCER G1/4	119
1827001988	Pilot lamp 24V=, 50 mA	96
1827001991	Electric button 1 open contact/1 closed contact	96
1827001992	Electric rotary switch 1 open contact/1 closed contact	97
1827003005	Red and blue connection cable; 1,5 m each; plug/clamp	101
1827003025	Tool set for pneumatics	130
1827003030	Pneumatic; hydraulic; electric sticker symbol case	151
1827003031	Blue electrical cable 0,75 mm²; 25 m	104
1827003037	10-fold bridge for clamps	104
1827003098	Rapid exhaust valve G1/8	61
1827003124	Male stud fitting M5 with non-return valve; d=4	113
1827003141	Terminal block 2,5 mm²	105
1827003142	Clamp designation 01-40	105
1827003147	OR 3-fold; SI	68
1827003148	AND 3-fold; SI	68
1827003211	Plug with threaded connector, BS	103

Material number overview

Material number overview

1827003212	Measuring cable, 250 mm; red, BS	99
1827003213	Measuring cable, 250 mm, blue, BS	99
1827003214	Measuring cable, 250 mm, black, BS	99
1827003215	Measuring cable, 500 mm, red, BS	100
1827003216	Measuring cable, 500 mm, blue, BS	100
1827003217	Measuring cable, 500 mm, black, BS	100
1827003218	Measuring cable 1000 mm, red, BS	100
1827003219	Measuring cable 1000 mm blue, BS	100
1827003220	Measuring cable 1000 mm black, BS	100
1827003221	Device adapter for electric cylinder switch; BS	48
1827003224	PN proximity switch with holder	47
1827003225	Vacuum ejector, SI	79
1827003242	Connection cable for VTS/VTS02	71
1827003244	Valve block 02; 8 positions; SI	70
1827003246	3/2-way adjustable control valve; -1 to 0 bar	50
1827003299	Profile plate 565 x 700 x 30 mm	13
1827003349	Loosening slide extension	125
1827003351	Connecting pole for snap in	127
1827003352	Socket LED form A; BS	97
1827003353	Socket LED form B; BS	98
1827003354	Socket LED form C; BS	47
1827003354	Socket LED form C; BS	98
1827003355	Socket P/E form A; BS	99
1827003365	BIBB basic pneumatics kit, SI	29
1827003371	Single action cylinder d=25; s=50 mm; SI	44
1827003372	Double action cylinder; d=25; s=100 mm; SI	44
1827003374	3/2-way control valve G1/8; PN spring return; SI	58
1827003375	3/2-way control valve G1/8; PN pulse; SI	58
1827003376	5/2-way control valve G1/8; PN spring return; SI	59
1827003377	5/2-way control valve G1/8; PN pulse; SI	59
1827003378	5/3-way control valve G1/8; mid. pos. closed PN; SI	60
1827003379	Throttle check valve G1/8; d=1 mm; SI	67
1827003380	3/2-way control valve G1/8; dynamic pressure; SI	61
1827003381	Rapid exhaust valve G1/4, SI	62
1827003382	OR G1/8 1-fold; SI	69
1827003383	AND M5 1-fold, SI	69
1827003384	3/2-way timer valve M5; SI	63
1827003385	3/2-way timer valve G1/8; SI	63
1827003386	Pressure regulator G1/8; 0,5-10 bar; SI	73
1827003387	Filter regulator G1/8; 0,1-1 bar; SI	72
1827003388	3/2-way adjustable control valve M5; 2 to 8 bar; SI	62
1827003389	3/2-way control valve G1/8 amplifier two-stage; SI	60
1827003392	3/2-way control valve M5 button; SI	50
1827003393	3/2-way control valve G1/8 button; SI	51
1827003394	3/2-way control valve M5 rotary switch; SI	51
1827003395	3/2-way control valve G1/8 emergency off; SI	52
1827003396	5/2-way control valve G1/8 button; SI	52

Material number overview

1827003397	5/2-way control valve G1/8 with rotary switch; SI	53
1827003398	5/3-way control valve G1/4 rotary hand switch; SI	53
1827003399	3/2-way control valve M5 roller lever; SI	56
1827003400	3/2-way control valve G1/8 roller lever; SI	56
1827003401	3/2-way control valve M5 roller lever with idle return; SI	57
1827003402	3/2-way control valve G1/8 roller lever with idle return; SI	57
1827003403	Reflex nozzle d=3 mm	78
1827003404	PN summation counter 6 digits; SI	80
1827003406	Manometer 0-10 bar, SI	74
1827003407	Manometer 0-2,5 bar, SI	74
1827003408	Manometer -1/0 bar, SI	75
1827003409	PN pressure display, SI	76
1827003410	Filter regulator 3/2-way valve; 0,2-8 bar; SI	72
1827003411	PN distributor 6-fold, SI	81
1827003412	3/2-way solenoid control valve M5 spring return; SI	64
1827003413	5/2-way solenoid valve G1/8 with spring return; SI	64
1827003414	5/2-way pulse solenoid valve G1/8; SI	65
1827003415	5/3-way solenoid valve G1/8 mid. pos. closed; SI	65
1827003421	Electrical limit sensor with roller lever; 1 change-over control; 2A	91
1827003422	Inductive sensor; 0,2 A; Sn=2 mm	92
1827003423	Capacitive sensor; 0,2A; Sn=1-4 mm	93
1827003424	Optical sensor; 0,2 A; Sn=1-200 mm	92
1827003428	Pneumatical pressure switch 1-16 bar, SI	77
1827003434	P/E converter -1 to 0 bar; SI	77
1827003436	Cable set BiBB electro-pneumatics	34
1827003437	Electric cylinder switch with adapter; BS	45
1827003455	Carrying plate 1 complete; SI	123
1827003456	Carrying plate 2 complete; SI	124
1827003457	Carrying plate 3 complete; SI	125
1827003464	Measuring cable, 1500 mm, red, BS	101
1827003465	Measuring cable, 1500 mm, blue, BS	101
1827003466	Measuring cable, 1500 mm, black, BS	101
1827003469	3/2-way control valve G1/8 with rotary switch	54
1827003550	PAL-PN kit	35
1827003551	PAL-EL kit; SI	39
1827003552	CS2 - grooved plate case; empty	12
1827003553	5-fold clamping strip with PAL ID plate	82
1827003554	Spacer pins for grooved plate	14
1827003555	5/2-way solenoid valve G1/8; PAL; SI	66
1827003556	5/2-way pulse solenoid valve G1/8; PAL; SI	66
1827003557	3/2-way control valve G1/8 with rotary switch PAL; SI	54
1827003558	Carrying angle 4-fold PAL; SI	102
1827003559	Terminal block 35-fold PAL; SI	106
1827003560	Hat rail 300 mm; PAL; SI	102
1827003561	Cable duct 200 mm PAL; SI	122
1827003562	Cable duct 235 mm PAL; SI	122
1827003564	Cable duct 300 mm PAL; SI	122

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Material number overview

1827003566	Cable duct 400 mm PAL; SI	122
1827003567	Cable duct 500 mm PAL; SI	122
1827003569	Limit switch with roller PAL; SI	91
1827003570	Cylinder switch with holder PAL; SI;	48
1827003574	5-fold clamping strip PAL; snap-in	82
1827003577	PN distributor with 3/2-way cont. valve; PAL; SI	81
1827003578	Electrical extension kit for BiBB; BOX; TSI	32
1827003583	Relay box 24V; 2A; 4 change-over controls; TSI	84
1827003584	Relay box, 24V; 2A; pick-up delay; TSI	84
1827003585	Relay box 24V; 2A; release time delay; TSI	85
1827003586	Display box 24V; optical/acoustic; TSI	85
1827003587	Distributor box 24V; 2A; 10+/10- sockets; TSI	86
1827003588	1 switch/2 buttons box 24V; 2A; TSI	86
1827003589	Switch box 2x 24V; 2A; LED; TSI	87
1827003590	Button box 2x 24V; 2A; LED; TSI	87
1827003591	Switch box emergency off 24V; 2A; TSI	88
1827003592	Counter timer box 24V; 2A; 3-digit; TSI	88
1827003593	PN counter timer box 8 bar 6-digit; TSI	80
1827003594	Relay box 24V; 2A; pick-up/release time delay; TSI	89
1827003595	Input/output box 24V; 2A; 16-fold; TSI	89
1827003596	VTs connecting box; 24V; 2A; 16-fold; TSI	71
1827003700	DS3synergy LT	11
1827003702	LT grooved panel	13
1827003703	Electrical attachment S	15
1827003705	Writing surface set; LE2	21
1827003721	Info board; DIN A4; jointed	18
1827003722	Rag holder set; LE2	22
1827003724	Connection cable D; 3 m	16
1827003725	Screen support arm	19
1827003727	Connection cable D; 1 m	17
1827003740	DS3 power pack 115 V~/4,5A	16
1827003741	Connection cable US; l=1 m/36"	17
1827003742	Connection cable US; l=2 m/72"	18
1827003743	Electro installation set US	20
1827008426	Compressor device set incl. accessories	128
1827020069	Clamp Holder for round cylinders, d = 25 mm	46
1829929200	Sticker labels; 80 pcs.	132
2121106000	T-connection d=6 mm	109
2123204000	End plug	112
R412005332	Y-connection d=4 mm	110
R900016169	CONDUCTOR END SLEEVE 0:75-L2= 7:9MM FLANGE SIZE; Delivery unit = 100	103
R900018134	The Pneumatic Trainer, Volume 1 - de	139
R900018144	The Pneumatic Trainer, Volume 2 - de	140
R900018486	Symbol stencil HY/PN	149
R900043942	Screwdriver TORX T10	131
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R900701018	CD-ROM „PNgraphics“, Slides for the manual „Pneumatics. Theory and Applications“	146
R900891168	Compressor	129
R900891177	Coupling connector	55
R901005712	Exercise series „Practice for Prof., Pneumatics“ Trainer's manual DE	135
R901005727	Exercise series „Practice for Prof., Electropneumatics/PLC/Pneum. controls“ Trainer's manual DE	137
R901005737	Exercise series „Practice for Prof., Pneumatics“ Trainee's manual DE	136
R901005741	Exercise series „Practice for Prof., Electropneumatics/PLC/Pneum. controls“ Trainee's manual DE	138
R961000168	Profile plate 1130 x 700 x 30 mm	13
R961000169	Grooved panel for DS4 with fastening set	13
R961000170	DS3 power pack 230 V~/4,5A	15
R961000171	Electro installation set D	19
R961000287	Roller container for pneumatics	23
R961000306	DS grooved panel; 800 x 750 mm (MG 274-W4 offer)	13
R961000439	Electro installation set CH	20
R961000563	Assortment of drawer dividers DS 100 (18x36E) (80.635)	23
R961000564	Assortment of drawer dividers DS 150 (18x36E) (80.636)	24
R961000568	Slip-resistant mat (18x36U) (119.000)	24
R961000783	Book „Pneumatics. Theory & Application“ - de	141
R961000802	7 sets of „Pneumatics“ training charts - de/en	150
R961000803	PN slide rule - de	149
R961001099	Power pack 230V~/24V=; 6,5A	90
R961001656	Pneumatic Systems WebTr@iner single license - de/en/es	143
R961001666	Set of perforated plates for containers	24
R961001731	CD-ROM, Media from Basic Pneumatics WebTr@iner - de/en/es	144
R961001732	CD-ROM, Media from Pneumatic Systems WebTr@iner - de/en/es	144
R961002074	SOFTWARE E-SCRIPT PN/K1 de	145
R961002281	Carrying plate 1 complete; SI	123
R961002283	Carrying plate 2 complete; SI	124
R961002699	Relay socket	95
R961002709	Relay with 3 changeover contacts	94
R961002710	Time relay with pickup or dropout delay	94
R961003214	Load simulator d=25 mm, s=100 mm, m=3,4 kg	45
R961003221	Set of rubber feet for slotted plate	14
R961003826	ECODESK: Table version groove plate	12
R961003963	Compressor 110 V	129
R961003964	Compressor 110 device set incl. accessories	128
R961003980	Electronic cylinder switch with 3-pin cable (with short-circuit protection)	46
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